

RATING METHODOLOGY OF THE APH YIELD EXCLUSION

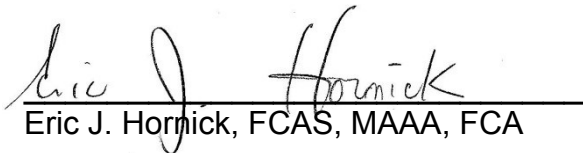
ACTUARIAL EXPERT REVIEW

UNITED STATES DEPARTMENT OF
AGRICULTURE

THE RISK MANAGEMENT AGENCY

FEBRUARY 6, 2015

Call Order # AG-645S-B-14-0016



Eric J. Hornick, FCAS, MAAA, FCA

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Executive Summary

The Risk Management Agency (RMA) of the United States Department of Agriculture (USDA) was established under the provisions of the Federal Agricultural Improvement and Reform Act of 1996 to supervise the Federal Crop Insurance Corporation (FCIC) and oversee the programs authorized under the Federal Crop Insurance Act (7 U.S.C. 1505(e)) (the Act). The Act requires FCIC’s Board of Directors (the Board) to establish procedures under which any policy or plan of insurance, as well as any related material or modification of such a policy or plan of insurance, submitted to the Board be subject to independent review by persons experienced as actuaries and in underwriting.

Oliver Wyman Actuarial Consulting, Inc. (Oliver Wyman) has been retained as an independent reviewer of Rating Methodology of the APH Yield Exclusion via a contract that was effective on January 12, 2015 (“the Submission”). This review is intended for the FCIC Board of Directors. The result of Oliver Wyman’s review is presented in this report to RMA.

Background

The Agricultural Act of 2014 (the “2014 Act”) mandated that RMA implement an adjustment into the calculation of the yield guarantees for applicable crop insurance programs. The adjustment is referred to as the Yield Exclusion Option (YE). The YE allows producers to eliminate low yields from the calculation of their APH, resulting in higher effective insurance coverage levels than had the YE not been in place. RMA implemented the YE for certain crops in in the 2015 crop year, and will expand the program to other crops in the 2016 crop year.¹ RMA subsequently engaged Sumaria Systems, Inc. (Sumaria) to review and report² on the procedures implemented by RMA to comply with the 2014 Act. Oliver Wyman has been contracted by RMA to review and opine on Sumaria’s Report. General information related to this Submission is presented in the following table:

APH Yield Exclusion Index: General Information	
Consultant	Sumaria Systems, Inc. Authors: Thomas O. Knight, Mary Frances Miller, Keith H. Coble & Barry J. Barnett
Type of Submission	The Submission supports the implementation of Section 11009 of the 2014 Farm Bill, allowing producer the option to exclude any recorded or appraised yield for any crop year in which the county yield as at least 50% below the average yield of the prior ten crop years.
Effective Period	To become effective for the 2015 or 2016 crop year, depending on Crop.

¹ USDA Informational Memorandum: PM-14-062, dated December 18, 2014

² Review of Adjustment in Actual Production History to Establish Insurable Yields” Determination of Actuarially Sound Premium Rates

Sumaria recommends that:

1. RMA follow the approach they have proposed and that we have described in computing effective coverage levels for policy units making use of Yield Exclusion in determining the yield guarantee.
2. RMA adopt the proposed procedures for deriving effective coverage level differentials and premium rates for policy units making use of Yield Exclusion.
3. RMA evaluate the feasibility of incorporating marginal premium rate caps such that the additional premium for any coverage interval cannot exceed the increase in liability.
4. RMA re-evaluate the coverage level differentials and the behavioral component after two years of YE experience has been collected.
5. RMA adjust experience at the individual record level to the smaller of the 65% common coverage level or the effective coverage level prior to compilation in StatPlan, thus preserving the actual indemnity experience in the base ratemaking process as much as possible.
6. RMA continue its current methods for adjusting compiled data at the StatPlan level to the 65% common coverage level.

Findings

The general basis for RMA's approach is patterned after adjustments implemented to accommodate the Trend Adjusted (TA) APH Option. Sumaria discusses this in their report and states that both programs increase the yield guarantee relative to what it would have been based on a simple average of historical yields. Sumaria also notes that the same fundamental principle that governed the adjustments for the TA option should govern adjustments for the YE option – adjustments must be made to insure the loss experience underlying the premium rates and the coverage offered must be consistent. This is the basis for Sumaria's recommendations 1 and 2 above. Recommendations 3 and 4 address concerns regarding equity (3) and the potential impact of the YE option on insured behavior (4). Recommendations 5 and 6 address data collection.

Oliver Wyman agrees with Sumaria's recommendations, with the following concerns:

1. The extrapolation procedure for effective coverage levels above 85% assumes that the marginal charge for each subsequent 5% should be the same. (Marginal charge from 90% to 95% is the same as from 140% to 145%, etc.)
2. For larger extrapolations, even something as simple as rounding can produce significant differences in calculated values.
3. Producer results falling just above or just below the YE threshold can have a significant impact on the calculations. The removal of a value below the YE threshold has a fundamentally different effect than a replacement using the "60% plug".
4. The ability to purchase coverage beyond the top of the table can lead to moral hazard, morale hazard and adverse selection. Sumaria noted this concern and specifically mentioned the potential impact of insured behavior on YE experience. Oliver Wyman believes that this is potentially a material concern, and warrants examination sooner than the two year period recommended by Sumaria.
5. The limitation that Sumaria suggests on capping marginal premium at marginal liability is an improvement to RMA's procedure(which is based on total, not marginal), but still is likely unfair to the policyholder because the policyholder is not going to have a total loss in every year, and therefore should be charged less than the liability in a specific layer.

Research Report

Description of Review Methodology

Oliver Wyman’s review of the Submission is based on guidance provided in “The Statement of Principles Regarding Property and Casualty Insurance Ratemaking.” The Statement of Principles provides guidelines for actuaries; all ratemaking tasks undertaken by an actuary should be done in conformity with these statements:

Principle 1: A rate is an estimate of the expected value of future costs.

Ratemaking should provide for all costs so that the insurance system is financially sound.

Principle 2: A rate provides for all costs associated with the transfer of risk.

Ratemaking should provide for the costs of an individual risk transfer so that equity among insureds is maintained. When the experience of an individual risk does not provide a credible basis for estimating these costs, it is appropriate to consider the aggregate experience of similar risks. A rate established from such experience is an estimate of the costs of the risk transfer for each individual in the class.

Principle 3: A rate provides for the costs associated with an individual risk transfer.

Ratemaking produces cost estimates that are actuarially sound if the estimation is based on Principles 1, 2, and 3. Such rates comply with four criteria commonly used by actuaries: reasonable, not excessive, not inadequate and not unfairly discriminatory.

Our review is based on guidance provided in Actuarial Standards of Practice (ASOP), specifically ASOP No. 12, Risk Classification (for All Practice Areas) adopted by the Actuarial Standards Board (ASB). The ASB promulgates ASOPs for use by actuaries when providing professional services in the United States. ASOPs are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure. Each ASOP articulates a process of analysis, documentation, and disclosure that, in the ASB’s judgment, constitutes appropriate practice within the scope and purpose of the ASOP.³

³ Introduction to the Actuarial Standards of Practice. Actuarial Standards Board, 2004

Specifically, ASOP No. 12 establishes the following relevant considerations related to the selection of risk characteristics and risk classes which were considered in our review⁴:

Relationship of Risk Characteristics and Expected Outcomes — The actuary should select risk characteristics that are related to expected outcomes. A relationship between a risk characteristic and an expected outcome, such as cost, is demonstrated if it can be shown that the variation in actual or reasonably anticipated experience correlates to the risk characteristic. In demonstrating a relationship, the actuary may use relevant information from any reliable source, including statistical or other mathematical analysis of available data. The actuary may also use clinical experience and expert opinion.

Rates within a risk classification system would be considered equitable if differences in rates reflect material differences in expected cost for risk characteristics.

The actuary should consider the interdependence of risk characteristics. To the extent the actuary expects the interdependence to have a material impact on the operation of the risk classification system, the actuary should make appropriate adjustments.

In addition to the items noted above, we also considered our general knowledge of modeling techniques and best practices.

Particular to this review is a consideration of three common insurance terms: “moral hazard”, “morale hazard”, and ‘adverse selection”.

The Glossary of Insurance and Risk Management Terms as published by International Risk Management Institute (IRMI) defines these terms as follows:

Moral Hazard

A term used to describe a subjective hazard that tends to increase the probable frequency or severity of loss due to an insured peril. Moral hazard is measured by the character of the insured and the circumstances surrounding the subject of the insurance, especially the extent of potential loss or gain to the insured in case of loss. ... Moral hazards are considered when underwriting insurance, particularly fire insurance, and are addressed by certain policy exclusions. For example, underwriters are hesitant to insure vacant and unoccupied buildings because of the possibility that an insured will be tempted to intentionally start a fire to obtain an insurance recovery.

⁴ ASOP 12, Section 3, certain non-relevant portions were omitted

Morale Hazard

A term used to describe a subjective hazard that tends to increase the probable frequency or severity of loss due to an insured peril. Morale hazard, as contrasted with moral hazard, does not imply a propensity to cause a loss but implies a certain indifference to loss simply because of the existence of insurance. For example, an insured's attitude may be indifferent if a loss occurs because they have insurance.

Adverse Selection (anti-selection)

An imbalance in an exposure group created when persons who perceive a high probability of loss for themselves seek to buy insurance to a much greater degree than those who perceive a low probability of loss.

We refer to these items in the following sections.

Review of Submission

Introduction

Sumaria has submitted a report to RMA containing their review of the changes that are being implemented as a result of the 2014 Act.

Sumaria's recommendations are as follows:

Recommendation 1

We recommend that the RMA follow the approach they have proposed and that we have described in computing effective coverage levels for policy units making use of Yield Exclusion in determining the yield guarantee.

Recommendation 2

We recommend that the RMA adopt the proposed procedures for deriving effective coverage level differentials and premium rates for policy units making use of Yield Exclusion.

Recommendation 3

We recommend that the RMA evaluate the feasibility of incorporating marginal premium rate caps such that the additional premium for any coverage interval cannot exceed the increase in liability.

Recommendation 4

We recommend that the RMA re-evaluate the coverage level differentials and the behavioral component after two years of YE experience has been collected. This will be the beginning of capturing the data needed to refine current actuarial procedures.

Recommendation 5

We recommend that the RMA adjust experience at the individual record level to the smaller of the 65% common coverage level or the effective coverage level prior to compilation in StatPlan, thus preserving the actual indemnity experience in the base ratemaking process as much as possible.

Recommendation 6

We recommend that the RMA continue its current methods for adjusting compiled data at the StatPlan level to the 65% common coverage level.

Discussion

The APH (Annual Production History) program has been in place for many years, and under this program producers currently have an option to replace their own production history with a minimum value that is established as 60% of the County T-Yield (“60% plug”).

The use of the 60% plug minimizes the effect of a particularly bad year in a producer’s history, and makes the producer eligible for more coverage than they would be had the “60% plug” not been available.

It is our understanding that producers generally take advantage of the 60% plug if available.

A portion of a Table included in Sumaria’s report demonstrates the effect:

Year	County T-Yield	60% of APH	Producer APH	APH with 60% Plugs
2005	96	58	110	110
2006	104	62	100	100
2007	104	62	88	88
2008	104	62	118	118
2009	106	64	111	111
2010	106	64	110	110
2011	119	71	55	71
2012	119	71	20	71
2013	119	71	57	71
2014	119	71	153	153
Approved Yield			92	100

Note that in 2011-2013, the Producer’s APH was less than 60% of the County T-Yield. The application of the “60% plug” allowed the Producer to substitute 71 bushels (shown as 60% of APH) for the actual production of 55, 20 and 57 bushels, respectively. As a result, the 10-year average increased from 92 bushels to 100 bushels, allowing the producing to purchase almost 9% of additional coverage, in consideration for additional premium.

The Yield Exclusion that is being implemented takes this process one step further, and allows producers to completely exclude the yields from certain years from the APH calculation.

Sumaria's report includes the following Table:

Year	County T-Yield	60% of APH	Producer APH	APH with 60% Plugs	APH with Excluded Yields
2005	96	58	110	110	110
2006	104	62	100	100	100
2007	104	62	88	88	88
2008	104	62	118	118	118
2009	106	64	111	111	111
2010	106	64	110	110	110
2011	119	71	55	71	Excluded
2012	119	71	20	71	Excluded
2013	119	71	57	71	71
2014	119	71	153	153	153
Approved Yield			92	100	108

In that Table, the 2011 and 2012 years are no longer being “plugged” with a 60% value, rather they are being excluded entirely. In the example shown above, this raises the Approved Yield from 100 to 108, resulting in a further increase of 8%.

Note that the 2013 year was not eligible for exclusion. However, this cannot be seen simply by examining the Table. Rather, the 2013 year was not eligible for exclusion because the Producer's APH in that year was greater than 50% of the 10-Year Moving Average used to determine eligibility; only years at least 50% below are deemed eligible.

As a result of a discussion with RMA, Oliver Wyman created the following Table that showed a sample set of data in which the 2011 and 2012 years would be eligible for exclusion and the 2013 year would not.

Year	10-Yr Moving Average	50% of Moving Average	Producer APH	Eligible for Exclusion
2005	96	48.0	110.0	No
2006	104	52.0	100.0	No
2007	103	51.5	88.0	No
2008	105	52.5	118.0	No
2009	106	53.0	111.0	No
2010	108	54.0	110.0	No
2011	119	59.5	55.0	Yes
2012	115	57.5	20.0	Yes
2013	110	55.0	57.0	No
2014	108	54.0	153.0	No

The 10 Year Moving Average is designed to be consistent with the County T-Yield shown in the prior Table; note that unlike the County T-Yield, the 10-year Moving Average changes annually. In 2011 and 2012, the Producer APH is below 50% of the Moving Average, making those years eligible for exclusion. However, in 2013 the Producer APH of 57.0 is higher than 50% of the Moving Average (55.0) and this year is thus not eligible for Exclusion. Had the Producer APH been 55.0 or lower, this year would also have been eligible for Exclusion.

It is our view that there is no significant issue with the calculation for the points for which it is interpolated; however, there are issues with the calculation for points beyond the 85% level (which is the maximum level published in the actuarial documents).

If the coverage level after APH (Effective Coverage Level) is under 85%, the same coverage could be obtained without the Yield Exclusion, and the program correctly charges the same Premium per Acre under either example.

For example, if the APH prior to Yield Exclusion is 100, then at the 77% coverage level, the guarantee would be 77. If the APH after Yield Exclusion rose to 110, a producer could purchase coverage at the 70% level, and the resulting guarantee would still be 77. There is no difference in the coverage purchase and no difference in the resulting Premium per Acre.

However, issues occur when the Effective Coverage Level rises above 85% and these issues become magnified as the Effective Coverage Level increases.

For example, if the APH prior to Yield Exclusion is 100, then at the 85% coverage level, the guarantee would be 85. If the APH after Yield Exclusion rose to 140, a producer could still purchase coverage at the 85% level, but the resulting guarantee would increase to 119. As a result, the Effective Coverage Level would be 119%.

This situation is demonstrated in the following data:

Year	10-Yr Moving Average	50% of Moving Average	Producer APH	Eligible for Exclusion
2005	96	48.0	120.0	No
2006	104	52.0	30.0	Yes
2007	103	51.5	30.0	Yes
2008	105	52.5	50.0	Yes
2009	106	53.0	50.0	Yes
2010	108	54.0	160.0	No
2011	119	59.5	130.0	No
2012	115	57.5	125.0	No
2013	110	55.0	155.0	No
2014	108	54.0	150.0	No

This producer had six very good years, averaging 140 bushels per year, and four poor years, averaging 40 bushels per year. The APH prior to exclusion is 100 $[(140 \times 6 + 40 \times 4)/10]$, but it rises to 140 after Yield Exclusion.

The resulting charge as shown in Sumaria's Report would be extrapolated based on the last two levels published by RMA (80% and 85%). If for example, the 80% differential was 1.40 and the 85% differential was 1.50, each additional 1% would incur an additional differential of 0.02, so the differential for 119% would be 2.18.

The only limitation on the differential is one of marginal utility. Since a Producer can incur no greater than a 100% loss (they can have multiple partial losses in a policy period, but the total cannot exceed 100% during a policy period), RMA has proposed that a cap be imposed such that total premium not exceed total liability. Sumaria goes one step farther, recommending that the marginal premium in any 5% coverage range (i.e. 85% to 90%, 110% to 115%) not exceed the marginal liability in that level. This would eliminate the possibility of a Producer purchasing additional insurance to a level at which they would have no opportunity to recover more than they paid for the insurance.

It should be noted that the threshold nature of this calculation can produce significantly different results depending on whether the Producer APH is just above, or just below, 50% of the Moving Average.

For example, if the 2008 and 2009 years had producer APH's of 56 and 56, instead of 50 and 50, those years would not be eligible for exclusion and the APH after Yield Exclusion would be 119, not 140.

While we agree with Sumaria that a marginal limitation is a better limitation than a limitation in total, we have concerns for the possibility of Moral Hazard and Morale Hazard existing given the potential for a producer to insure more than they would expect on average to produce.

Moral Hazard refers to the possibility of an insured realizing a gain due to the presence of insurance. This hazard is more likely to be present when higher amounts of insurance are purchased and is the reason that insurers generally prefer to share a loss with policyholders either through the use of deductibles or co-insurance.

Morale hazards focus on policyholders being careless because of the presence of insurance. Allowing coverage amounts significantly above the long-term average production could lead to these hazards as well.

Additionally, the larger the extrapolation, the larger potential for data to emerge that is not consistent with the extrapolation.

Interpolation generally works well because the potential for error is bounded by other established results. (In Sumaria's example, if the differential is 1.40 at 80% and 1.50 at 85%, one can clearly see that a 1.45 differential should be at approximately 82.5%. Even if it is not a straight-line interpolation, the result will only be slightly higher or lower than the straight-line calculation.)

However, the extrapolation of a differential for 119%, based on behavior between 80% and 85% is based on the questionable assumption that the measured functional relationship between 80% and 85% will extend to 119%. The uncertainty of this assumption is compounded by the fact that small differences, even those due to rounding, may have a large impact on the extrapolated value. For example, if the actual differentials were 1.395 and 1.505 (yet were shown as 1.40 and 1.50) the differential at 119% would be calculated as 2.253. This is 3% higher than the 2.19 that was previously calculated.

Given that differences do exist in charges of Premium per Acre between 50% and 85%, it is not reasonable to assume that such differences do not exist between 85% and 119%. As such, a pure extrapolation may produce charges that are either too high or too low than the actuarially indicated premiums.

The potential for charges that are too low as compared to the actuarially indicated premium could be further complicated by adverse selection, as producers with a greater propensity to loss purchase more and more insurance.

Based on this review, while we agree with Sumaria's first two recommendations, we recognize that there does not appear to be any data to support the extrapolation beyond the 85% coverage level, particularly to the levels that are possible in a situation where producers experience either very good years or very poor years. In this "feast or famine" situation, the insurance will be guaranteeing producers significantly more in indemnity than they would expect to produce in an

average year. However, we also understand that this is the only option available to RMA at this point in time.

Sumaria's third recommendation goes further than RMA has gone to this point, but in our opinion, limiting marginal premium to marginal liability (which essentially assumes a 100% loss ratio in a product that cannot have a loss ratio in excess of this amount) does not go far enough. The program should be reviewed further to determine appropriate pricing for these higher levels and to determine whether a maximum Effective Coverage Level (lower than 200%, which is the current mathematically implied maximum) should be implemented.

We agree with Sumaria's fourth recommendation that these differentials should be evaluated within the next two years. This will help address some of the issues described in this report.

3

Discussion of Issues Surfaced in the Review of Items Listed in C.4

The following discussion addresses each of the items listed in Section C.4 of the Expert Review of the Rating Methodology of the APH Yield Exclusion for the FCIC Board of Directors. We present detailed discussion regarding matters that are within the scope of our knowledge as actuarial expert reviewers. When an item lies outside the scope of our knowledge, we indicate so in its corresponding discussion. The issues are reproduced in the order listed in C.4:

1. Actuarial soundness

A. Is adequate, credible and reliable rate-making data available? Is it likely that the data will continue to be available?

For Effective Coverage Levels of 85% or less, the same data that is currently used can be used going forward.

However, for higher coverage amounts it is necessary to extrapolate the amount of coverage as well as the premium. This extrapolation assumes that the coverage rate beyond 85% will be exactly equal to the coverage rate between 80% and 85%, which are the last two published amounts.

As the amount of coverage increases further, it becomes more likely that this amount will not be the appropriate coverage level and premium. This is particularly an issue as the coverage amount grows above 100% of the expected output.

Is the data vulnerable to tampering if the proposed rate methodology is approved?

We would not expect this to be the case; however this is beyond our area of expertise.

B. Are the explicit and implicit assumptions used in the rating process reasonable?

The biggest assumptions are:

- If the product of (bushels x coverage percentage) produces the same amount of coverage with or without the Yield Exclusion, the coverage and premium should be the same. This assumption is reasonable, and should avoid the potential for sophisticated insureds selecting a lower price for the same coverage.*
- If the effective coverage is below 85%, straight line interpolation is used between the nearest 5% bands. This assumption is currently in place and is also reasonable.*

- *If the effective coverage is above 85%, straight line extrapolation is used with the rate of change between 80% and 85% being applied to produce the desired coverage. This assumption is not reasonable for two reasons.*

The Submission has not demonstrated that this rate of change should be the same, rather it just states:

A similar approach is taken in deriving Effective Coverage Level Differentials for effective coverage levels above the maximum coverage level available, except that linear extrapolation rather than interpolation is used. The extrapolation is based on the rate of change of coverage level differentials between the next to highest and highest available nominal coverage levels.

Additionally, no consideration for the possibility of moral hazard, morale hazard and adverse selection affecting the results at higher coverage is provided.

Absent of this information, we are unable to conclude that the marginal coverage between 100% and 105% should be the same as from 80% to 85% or 145% to 150%.

C. Are the technical analyses (e.g., stochastic and other simulations) correct and recognized as appropriate? Do they provide credible, relevant results?

No simulations or technical analysis is included.

D. Is the data used for the analyses appropriate, reliable, and the best available?

As noted above, the data used for interpolation between existing 5% bands is already published in actuarial documents and we have no reason to believe that this is not reasonable.

However, for the extrapolation beyond 85%, no data has been provided to indicate that this extrapolation is reasonable.

F. Are the proposed premium rates likely to cover anticipated losses and a reasonable reserve?⁵

For effective coverage at or below 85%, the coverage is exactly the same that could have been obtained using different coverage percentages and estimates of bushels. As long as the existing programs have been established in such a way to cover anticipated losses and a reasonable reserve, the APH Yield Exclusion should also do so.

Above 85%, it is unclear from the documentation whether the premium rates would cover anticipated losses and a reasonable reserve. The Sumaria report assumes that straight-line extrapolation beyond the last published factor will produce reasonable results; nothing scientific supports this conclusion and due to factors such as moral hazard, morale hazard and adverse selection we are not convinced that this conclusion can be supported.

⁵ The SOW provided by RMA did not contain a letter "E".

Further research needs to be done to ensure that the rates are indeed adequate, and also meet the actuarial standard of being not excessive and not unfairly discriminatory.

G. Is the actuarial methodology appropriate for the insured risks?

The interpolation/extrapolation described earlier are reasonable, notwithstanding the concerns expressed earlier in this report.

The expert reviewers' written report may also include additional information at the discretion of the expert reviewer.

No additional comments beyond what appears in the narrative in the previous section.

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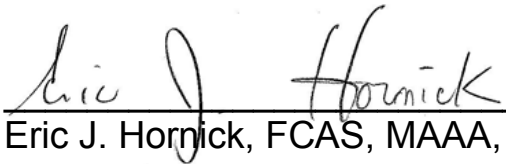
Conclusion

Based on our review, we believe that there are several aspects of the Submission, primarily relating to the extrapolation methodology beyond 85% that should be reconsidered and/or refined.

5

Acknowledgement

I, Eric J. Hornick, am a Principal with Oliver Wyman Actuarial Consulting Inc. I am a member of the American Academy of Actuaries and a Fellow of the Casualty Actuarial Society. I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.


Eric J. Hornick, FCAS, MAAA, FCA

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Distribution and Use

- Usage and Responsibility of Client – This report was prepared for the sole use of RMA for the purpose of evaluating the proposed APH Yield Exclusion. All decisions in connection with the implementation or use of advice or recommendations contained in this report are the sole responsibility of RMA.
- Circulation or Publication – This report is not intended for general circulation or publication, nor is it to be used, quoted or distributed to others for any purpose other than those that may be set forth herein or in the written agreement pursuant to which this report has been issued without the prior written consent of Oliver Wyman.
- Third Party Reliance and Due Diligence – Oliver Wyman’s consent to any distribution of this report (whether herein or in the written agreement pursuant to which this report has been issued) to parties other than RMA does not constitute advice by Oliver Wyman to any such third parties and shall be solely for informational purposes and not for purposes of reliance by any such third parties. Oliver Wyman assumes no liability related to third party use of this report or any actions taken or decisions made as a consequence of the results, advice or recommendations set forth herein. This report should not replace the due diligence on behalf of any such third party.
- Public Dissemination – Neither all nor any part of the contents of this report, any opinions expressed herein, shall be disseminated to the public through advertising media, public relations, news media, sales media, mail, direct transmittal, or any other public means of communications, without the prior written consent of Oliver Wyman.

Considerations and Limitations

- **Data Verification** – For our analysis, we relied on data and information provided in the Submission and the supporting spreadsheet without independent audit. Though we have reviewed the data for reasonableness and consistency, we have not audited or otherwise verified this data. It should also be noted that our review of data may not always reveal imperfections. We have assumed that the data provided is both accurate and complete. The results of our analysis are dependent on this assumption. If this data or information is inaccurate or incomplete, our findings and conclusions may need to be revised.
- **Unanticipated Changes** – Our analysis makes no provision for extraordinary future changes in the legal, social, economic, or regulatory environment that might affect the proposed APH Yield Exclusion.
- **Other Issues** – Readers of this report should not infer Oliver Wyman’s acceptance of any methodologies and/or judgments that were not discussed in the report.

8

Biographies of Participants in Expert Review

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Professional History

- Principal, Oliver Wyman (2005-present)
- Senior Vice President, Guy Carpenter (2004-2005)
- Vice President, Centre Solutions (1998-2004)
- Various positions of increasing responsibility, Insurance Services Office, Inc. (1988-1998)

Professional Memberships

- Fellow of the Casualty Actuarial Society (2003)
- Associate of the Casualty Actuarial Society (1996)
- Member, American Academy of Actuaries (1996)
- Fellow, Conference of Consulting Actuaries (2005)

Education

- Union College, Bachelor of Science, Psychology, 1986

Eric Hornick is a Principal in the Melville, NY office of Oliver Wyman Actuarial Consulting, Inc. He specializes in all lines of property/casualty insurance, including professional liability and workers' compensation. His primary responsibilities are to provide actuarial consulting services to a variety of insurance, reinsurance and self-insured organizations. He serves as lead consultant and provides risk financing guidance on actuarial assignments.

Eric Hornick has provided actuarial services for 27 years. Prior to joining Oliver Wyman, Eric was a Senior Vice President at our sister company, Guy Carpenter, where he provided actuarial expertise in support of Carpenter's brokerage operations. He joined Guy Carpenter after spending six years at Centre Solutions and ten years at Insurance Services Office, Inc.

Eric Hornick is a Fellow of the Casualty Actuarial Society, a Member of the American Academy of Actuaries and a Fellow of the Conference of Consulting Actuaries.

Professional Experience

- Experienced with nearly every line of insurance
- Reviewed Washington State Workers' Compensation retrospective rating program
- Regulatory actuarial consultant for the State of Vermont
- Professional liability and Workers compensation reserving and forecasting – actuarial reviews of liabilities and loss forecasts for various organizations.
- Constructed Excel-based Workers' Compensation models
- Lead consultant on a variety of self-insured programs and captive insurance companies
- Reinsurance expertise from seven years of experience with Centre Solutions and Guy Carpenter
- Qualified to provide opinions for statutory annual statements.

Recent Speaking Engagements

- Issues in Reinsurance: Risk Transfer, Attestation and Documentation – 2006
- New York Workers' Compensation Reform – 2007
- Actuarial Issues and Insights – 2007
- State of Washington – Retrospective Rating – 2009 (internal)
- Basic Goals for the Portfolio of Reinsurance Ceded – 2011
- New York State Workers' Compensation – 2014
- New York Workers' Compensation – 2014

Professional Activities

- Past President, Casualty Actuaries of Greater New York
- Past Chairperson, CAS Regional Affiliates Committee
- Chairperson, CAS Committee on Sponsorships and Advertising
- Member, Professional Education Policy Committee
- Member, CAS Examination Committee
- Member, National Council of Self Insurers

Publications

- Examining Costs and Trends of Workers' Compensation Claims in New York State (2013), Co-Author
- Examining Costs and Trends of Workers' Compensation Claims in the State of Connecticut (2012). Co-Author

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Professional History

- Oliver Wyman (1993-present)
- National Council on Compensation Insurance (1989-1993)
- Milliman and Robertson (1987-1989)

Professional Memberships

- Fellow of the Casualty Actuarial Society (1998)
- American Academy of Actuaries (1993)
- Fellow of the Conference of Consulting Actuaries (2001)

Education

- University of Massachusetts, Master of Science Degree in Electrical Engineering (1981)
- State University of New York, Bachelor of Science Degree in Physics (1978)

Scott J. Lefkowitz is a Partner of Oliver Wyman Actuarial Consulting, Inc. and Leader of the Melville, New York office. He specializes in all lines of property/casualty insurance and is regarded as an expert in the area of workers' compensation. He is currently the managing consultant for a variety of clients, including state regulatory authorities, regulators, public entities, insurance companies and industrial firms.

Scott is a Fellow of the Casualty Actuarial Society, a member of the American Academy of Actuaries, and a Fellow of the Conference of Consulting Actuaries.

Professional Experience

Scott has 27 years of actuarial experience in the insurance and risk management industry. Prior to joining Oliver Wyman, Scott was an Actuarial Manager at the National Council on Compensation Insurance. His responsibilities included many aspects of Workers' Compensation ratemaking and reserving, as well as research activities dealing with the overall Workers' Compensation system. Scott was also responsible for estimating the cost impact of legislative activity and reform, assisting in the preparation of expert witness testimony for several state rate filings, and the peer review of state rate filings. Scott began his actuarial career at Milliman and Robertson where his responsibilities included preparation of rate and reserve analyses for a number of insurance coverages.

Since joining Oliver Wyman in 1993, Scott has provided a broad range of actuarial consulting services to property and casualty insurance companies, investors, brokerage firms, government entities, self-insured corporations, self-insured groups, and state insurance departments. The services provided include:

- Reserve analyses
- Financial viability analysis
- Profitability studies
- Risk funding studies
- Rate analysis and program design
- Risk program analyses
- Captive feasibility studies
- Litigation support
- Expert witness testimony

Professional Activities

Scott has served on a number of committees of the Casualty Actuarial Society, including the Examination Committee, the Committee on the Theory of Risk and the Syllabus Committee.

Publications

- Examining Costs and Trends of Workers' Compensation Claims in New York State (2012), Co-Author
- New York State Self-Insured Employers & Workers' Compensation Board Assessments (2012), Co-Author
- Examining Costs and Trends of Workers' Compensation Claims in the State of Connecticut (2012), Co-Author
- Examining Costs and Trends of Workers' Compensation Claims in the State of Massachusetts (2012), Co-Author



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