



Ohio Bureau of Workers' Compensation Comprehensive Study

Actuarial Department Functions & Resources:
Actuarial Department Organization

Report 4.4

Deloitte Consulting LLP

Group 4

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Audit • Tax • Consulting • Financial Advisory.

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Executive Summary

Introduction

Current law requires that BWC contract with one or more actuarial firms to perform actuarial services for the actuarial audit reserve, rate adequacy, program pricing reviews, and other matters. In addition, House Bill 100 also required that BWC contract with one or more actuarial firms to assist in measuring the performance of Ohio's workers' compensation system and in comparing it to other state and private workers' compensation systems (the Comprehensive Study). There is limited internal capacity to analyze data, trends and findings relative to rates, programs pricing and reserving. As a result, there is almost a complete reliance on outside actuarial resources for all traditional actuarial functions, with limited internal review and analysis of findings.

BWC is interested in expanding its internal actuarial functions to include core actuarial functions. Accordingly Task 36 of the Ohio Bureau of Workers' Compensation Comprehensive Study ("Comprehensive Study") includes an evaluation of the organization and structure of the BWC's actuarial department relative to industry standards, other state insurance funds and monopolistic state funds.

Conclusions

Findings

- Relative to prevailing practices, the BWC Actuarial function is limited. There is limited internal capacity to analyze data, trends and findings relative to rates, programs pricing and reserving. As a result, there is almost a complete reliance on outside actuarial resources for all traditional actuarial functions, with limited internal review and analysis of findings.
- Typical practice in the industry is to offer a professional development program or support system to employees who are working towards becoming an Associate or Fellow in the Casualty Actuarial Society.
- BWC must develop creative solutions to attract and retain actuarial resources given the competition for this talent.

Recommendations

We recommend that the BWC expand the Actuarial Division to more effectively support its mission, which we perceive to be:

- Significantly contribute to the ongoing assessment of the effectiveness and efficiency of the Ohio workers' compensation system.
- Recommend and/or drive continuing efforts to improve the financial security and stability of the system.
- Communicate to the public, Legislature, and the Workers' Compensation Commission to facilitate transparency and transfer of information on matters related to actuarial analysis.

The following recommendations address the opportunities identified to advance this mission:

- **Expand the BWC Actuarial Division responsibilities to include:**
 - Analyze and assess loss reserves and net asset level needs.
 - Establish appropriate rate levels and pricing programs.
 - Design and analyze programs.
 - Monitor and assess the impact of cost control efforts.
 - Analyze system benefits.
 - Ensure analysis is based on appropriate data and assumptions.

- **Develop and organize the Actuarial Division around four functional areas reporting to the Chief Actuary:**
 - Rate Levels & Programs Pricing – Responsible for pricing and ratemaking functions, including the implementation of other Comprehensive Study task recommendations.
 - Reserving and Net Asset Analyses – Over time has primary responsibility for reserving and net asset level analyses, including reinsurance evaluation and coordination and analysis of external studies, as well as for support of the claim operations and development of claim diagnostics.
 - Data Management – Responsible for improving the depth of data, data quality, and understanding of data, as well as to provide data needed for internal and external actuarial studies, including the development of an actuarial database overtime. In addition, we recommend that the existing Rate Adjustment Team transition to be part of this new functional area since much of the function surrounds data.
 - Rating – Existing function performed by the private employer and public employer (taxing districts and state agencies) teams, focusing on calculation of rates and ensuring accuracy.
- **Utilize external actuarial resources** to supplement actuarial resources, perform special analysis or deeper review, provide industry perspective and specific expertise, independent review of pricing and rate assumptions, and an annual second opinion on loss reserves and net asset levels. These resources will assist the BWC in meeting state and BWC Board requirements, and provide additional controls or support for the actuarial functions.
- **Establish an actuarial hiring and development program** to enhance its ability to attract and retain actuarial talent and to make this organizational expansion successful over time.

The Deloitte Consulting team appreciates the time and effort dedicated by BWC constituents over the course of our discovery to help us understand the Actuarial Division and BWC organization.

The Situation

Task Background

| RFP Task Reference | RFP Task Description | Task Category |
|-----------------------------------|---|-----------------------------------|
| Section 5.1.2 #36, page 15 | Compare and analyze the organization and the structure of the BWC's actuarial department to industry standards. This analysis should compare the BWC's actuarial department organization, structure, and staffing levels to industry standards, other state insurance funds and monopolistic state insurance funds. | Actuarial Department Organization |

As part of the BWC Comprehensive Study, this section of the Report comprises Deloitte Consulting's deliverable of Section 5.1.2 Task #2.

Methodology

The objective of this task was to compare BWC's actuarial organization to other state and private industry workers' compensation leaders. This is intended to provide a context within which BWC can assess alternative organizational models relative to business objectives.

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The methodology used for this task involved:

- Review current BWC actuarial organization.
- Review suggested actuarial organization functions as outlined by the BWC Chief Actuary.
- Research relevant industry sources for comparison to the BWC, as well as to gain a better understanding of trends in the actuarial profession.
- Interviews with BWC staff and Deloitte Consulting regarding recommendations for other Comprehensive Study tasks and the impact on actuarial workloads.
- Researched relevant industry sources for comparison to the BWC, as well as to gain a better understanding of trends in the actuarial profession.
- Incorporated our understanding and experiences with actuarial organizations from a variety of workers' compensation providers across the country, including state funds, and used this information when inventorying prevailing practices and developing recommendations.
- Develop recommendations for the actuarial organization and requisite skills.

Throughout our analysis and in the development of our recommendations, we considered the mission of the BWC and how the actuarial organization can and should support that mission.

Primary Constituents

- **BWC Chief Actuary and Actuarial Department**
- **BWC Claims**
- **BWC Administrator**
- **BWC Board of Directors**

Information and Data Gathered

Interviews

- Chief Actuary – Actuarial Department
- Phone interviews with representatives from other state funds
 - Texas Mutual Insurance Company
 - Montana State Fund
 - Maryland Injured Workers' Insurance Fund
 - Washington Dept. of Labor & Industries
 - California State Compensation Insurance Fund

Information/Data Request

- Reference materials received from BWC regarding the Actuarial Department Organization
- Other Comprehensive Study Task Recommendations
- Deloitte internal research on Actuarial program
- Deloitte research on trends in the Actuarial profession
- Relevant Industry Articles on the articles on the market for Actuarial talent
- CAS Materials on Actuarial Exam Requirements and Fees
- Responses/clarification to questions emanating from the data request
- Web sites of other state funds or labor and industry departments
- Deloitte prior experience working with and for numerous actuarial organizatio

Review and Analysis

Benchmarking and Research

The Actuarial Function

Internal and external workflows vary by company/entity, depending on a broad array of factors including, but not limited to, the private or public nature of the entity, geographic concentration, regulatory requirements, governance requirements and management preference.

Even with these factors, standard practices can be found:

- It is standard practice to complete reserve analysis both internally and externally.
- Actuarial opinions are generally required by the governance of the company/entity.
- It is common within the industry for to have a Board requirement for an actuarial opinion. It is also common for the Board to hear from the internal actuary and to request an understanding of any differences of opinion.
- It is standard practice to provide some degree of internal review and analysis of pricing and programs.
- A deep understanding of both pricing and reserving methodology and the assumptions can generally be found inside an actuarial department.
- It is common practice to have non-credentialed actuarial staff performing actuarial functions under the direction of credentialed staff.
- The Chief Actuary is typically charged with the reserve setting.
- Workloads are typically divided between balance sheet work such as reserving, net asset analysis, and claims analysis; and income statement work such as base rate calculation, program profitability and program design.
- It is uncommon for a state Board or Fund to have actuaries leading each of these sets of activities, but that would be a preferred structure.
- Responsibility for data quality and data management is often shared with centralized IT or operational functions, but no matter the structure, the actuarial department is integral to the understanding and maintenance of quality data.

Within the industry both internal and external actuarial resources are used to deliver on the mission of the organization. The use of external actuarial resources and third party analysis provide an independent view, access to talent and capacity, as well as access to the latest methodologies and broader data sets. However, reliance on actuarial resources may result in limited internal knowledge of rating programs and reserve adequacy and innovation. Additionally, organizations typically have less control over this external talent.

Actuarial Trends and Development Programs

Typical practice in the industry is to offer a professional development program or support system to employees, who are working towards becoming an Associate or Fellow in the Casualty Actuarial Society, including:

- Study time, exam fees, study courses and study materials.
- Rotational job opportunities.
- Strong linkage between progress toward certification (e.g., exam passage) and base salary, salary increases, bonuses and promotion.

Details regarding program benefits and compensation are shared within the industry. Actuarial candidates have access to this information through organizations such as the Casualty Actuarial Society, recruiting firms and universities with actuarial programs.

Actuarial resources continue to be in high demand throughout the industry. Competition for actuarial talent is projected to get more intense in the coming years as demand continues to outstrip supply. Organizations, typically maintain programs as one of the means to attract and retain actuarial talent.

Larger organizations with established actuarial programs typically recruit at universities with formal actuarial programs and utilize recruiters to identify experienced-hire candidates. These organizations also provide relocation packages.

While smaller companies or public entities typically do have actuarial development programs, they are typically less formal or robust. They are also challenged with attracting talent away from large private employers. For example, for public entities compensation scales are lower, formal programs are limited and recruiting and onboarding budgets restricted. However, there are offsetting benefits that typically exist or can be developed with these organizations (e.g., retirement benefits, quality of life) that can be stressed to counteract this competitive disadvantage. Additionally, some organizations have found ways to offer benefits by including in job classifications and performing compensation studies to support salary guidance adjustments on a periodic basis.

Analysis of Ohio BWC Data

Current law requires that BWC contract with one or more actuarial firms to perform actuarial services for the actuarial audit reserve, rate adequacy, program pricing reviews, and other matters. In addition, House Bill 100 also required that BWC contract with one or more actuarial firms to assist in measuring the performance of Ohio's workers' compensation system and in comparing it to other state and private workers' compensation systems (the Comprehensive Study).

There is limited internal capacity to analyze data, trends and findings relative to rates, programs pricing and reserving. As a result, there is almost a complete reliance on outside actuarial resources for all traditional actuarial functions, with limited internal review and analysis of findings. Additionally, there is neither clear ownership of data quality in the organization nor a focus on developing databases and tools to facilitate and improve analysis.

The current BWC actuarial organization is focused around:

- Pricing and rating individual risks.
- Ensuring the accuracy of rate calculations.
- Preparing data to be used by outside actuarial resources in performing various analyses and studies.

Deloitte's findings on other Comprehensive Study tasks have a direct impact on actuarial work load and go forward requirements, most notably, the following recommended BWC actions:

- Analyze and develop a Funding Policy for net assets.
- Examine alternatives to Group Rating (e.g. dividend plan, retro plan)
- Develop, evaluate and maintain a process to measure BWC's financial strength, for example metrics such as a funding ratio to monitor net asset level performance
- For loss and loss expense reserves, analyze: a risk provision, alternate methods, lump sum settlement financial impact, inflation analysis and the impact of discounting
- Study MIRA and the financial feasibility and/or impact of other claim reserving and claim management alternatives (such as a fully staffed claim department or claims predictive modeling)
- Develop alternative rating methods and base rate ranges
- Review actuarial analysis of self insureds' underlying experience
- Develop a pre-assessment methodology for the SIEGF
- Periodically test the reinsurance market to recommend alternative risk financing

- Oversee and/or provide the Statement of Actuarial Opinion

The BWC is interested in expanding its internal actuarial functions to include core actuarial functions to expand internal knowledge and expertise, as well as provide the capabilities to advance the organization, including addressing Comprehensive Study recommendations. However, its status as a state agency could create some hiring challenges for actuarial talent; for example, providing a professional development program that is comparable to other actuarial positions or the ability to offer reimbursement of relocation expenses for newly hired actuaries. However, the BWC does offer benefits that are on par with or better than industry. Two areas of enhanced benefits include a defined benefit plan, a rarity in private industry today, and the ability to generally limit the work week to 40 hours or overtime is paid.

The BWC location in Columbus, Ohio provides some opportunities and challenges. There are a number of universities in close proximity that would provide potential candidates for actuarial positions as well as other larger insurance organizations (Nationwide, State Auto, Motors Mutual, Ohio Department of Insurance, Grange) that could provide a pipeline of experience talent. At the same time, these companies are competition for these candidates that can offer more robust development programs and compensation packages.

Conclusions

Findings

- We envision the BWC actuarial organization as a having the following mission:
 - Significantly contribute to the ongoing assessment of the effectiveness and efficiency of the Ohio workers' compensation system.
 - Recommend and/or drive continuing efforts to improve the financial security and stability of the system.
 - Communicate to the public, Legislature, and the Workers' Compensation Commission to facilitate transparency and transfer of information on matters related to actuarial analysis.
- Relative to prevailing practices, the BWC Actuarial function is limited:

| | Ohio | Monopolistic | State Fund | Private Insurer |
|-------------------------------------|----------|------------------|------------|------------------|
| Actuarial Opinion | Not Used | Outside | Outside | Internal |
| Reserve and Balance Sheet Analysis | Outside | Internal | Internal | Internal/Outside |
| Claim Analysis and Support | Not Used | Not Used | Internal | Not Used |
| Pricing and Ratemaking | Outside | Internal/Outside | Internal | Internal |
| Experience and Retrospective Rating | Outside | Internal/Outside | Internal | Internal |
| Underwriting Support and Analysis | Not Used | Not Used | Internal | Internal |
| Data Management | Internal | Internal | Internal | Internal |
| Data Analytics and Mining | Not Used | Not Used | Outside | Outside |
| Predictive Modeling | Not Used | Not Used | Outside | Outside |
| Current Actuarial Staffing * | 3** | 5 | 3 - 6 | 6 - 12 |

Key:

- Not Used: Function not currently performed
- Outside: Function performed by outside resource
- Internal: Function performed by internal resource
- Internal/Outside: Function performed by internal resource, with review/second opinion from outside resource
- Outside/Internal: Function performed by outside resource, with review/second opinion from internal resource

* Reflects Staffing in traditional actuarial functions within the actuarial department

** BWC full time equivalents doing actuarial analyses. The organization chart on slide 21 additionally includes rating, rate adjustment and data quality/management responsibilities

- There is limited internal capacity to analyze data, trends and findings relative to rates, programs pricing and reserving. As a result, there is almost a complete reliance on outside actuarial resources for all traditional actuarial functions, with limited internal review and analysis of findings.
- Typical practice in the industry is to offer a professional development program or support system to employees who are working towards becoming an Associate or Fellow in the Casualty Actuarial Society.
- For smaller companies or public entities, these programs are typically less formal or robust, but exist in some form.
- BWC must develop creative solutions to attract and retain actuarial resources given the competition for this talent.

Performance Assessment

We assessed the performance of the Ohio workers' compensation system compared to these four overarching themes: Effectiveness & Efficiency; Financial Strength & Stability; Transparency; and Ohio Economic Impact. Each broad study element (Ohio Benefit Structure; Pricing Process; Cost Controls; Financial Provisions; and Actuarial Department Functions & Resources) is reviewed with these themes in mind to develop a performance assessment of the current state. Our performance assessment is made on each element in the context of its contribution to supporting the overarching themes.

For these performance assessments, the following scoring method applies:

| | |
|---|---|
|  | Strongly supports system performance |
|  | Supports system performance |
|  | Some support for system performance |
|  | Some opportunity for system performance change/enhancement |
|  | Significant opportunity for system performance change/enhancement |

Based on this scoring method, here is the performance assessment for the Actuarial Department Organization:

| | Effectiveness & Efficiency | Financial Strength & Stability | Transparency | Ohio Economic Impact |
|------------------------|---|---|---|---|
| Actuarial Organization |  |  |  |  |

Peers and Industry Standards Considered

Referenced Standards: State funds, industry practices, Deloitte experience

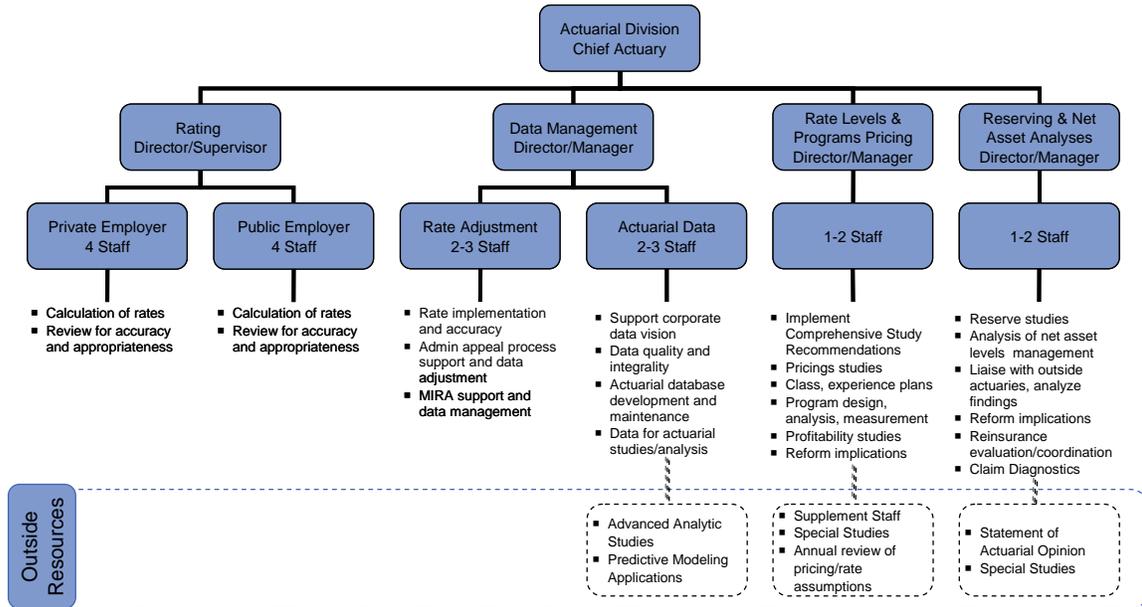
Recommendations

The following recommendations address the opportunities identified above:

- **Expand the BWC Actuarial Division responsibilities to include:**
 - Analyze and assess loss reserves and net asset level needs.
 - Establish appropriate rate levels and pricing programs.
 - Design and analyze programs.
 - Monitor and assess the impact of cost control efforts.
 - Analyze system benefits.
 - Ensure analysis is based on appropriate data and assumptions.
- **Develop and organize the Actuarial Division around four functional areas reporting to the Chief Actuary:**
 - Rate Levels and Programs Pricing - Establish a team and begin building in-house capability while expanding the capability to support the implementation of recommendations made in other Comprehensive Study task recommendations, such as performing rate level studies, designing and analyzing the performance of programs pricing, and conducting loss cost studies. This group would also liaise with external actuarial resources needed to perform independent reviews, as well as to provide additional expertise, specialized experience or additional capacity in this area. By focusing on these functions, BWC will be able to immediately advance the organization above the current capabilities level. Additionally, this would allow the BWC to build the capacity to address some of the task recommendations internally, while building necessary knowledge to manage this function more effectively on an ongoing basis.
 - Reserving & Net Asset Analyses - Establish Director/Manager function and begin to build the capability and capacity to perform some of these analyses and to review the results of any outside studies. In doing so the organization would have primary responsibility for reserving and net asset level analyses, including reinsurance evaluation and coordination and analysis of external studies, as well as for support of the claim operations and development of claim diagnostics. This responsibility would include appropriate oversight of any outside assistance that is needed due to expertise, capacity or independent opinion. Initially, the BWC should focus on understanding and interpreting the current reserving and net asset analysis performed by outside actuarial resources, transitioning to additional secondary studies and variance analysis over time, and hiring staff to support these functions as they are built out. In the longer term, the BWC actuarial function should be expanded to perform much of the standard reserving and net asset analyses, and use external resources for a second opinion to determine reserve and net asset levels, to provide for the appropriate control and independent support, and to meet state requirements for independent actuarial review.
 - Data Management – Establish a function with the initial responsibility to improve the depth of data, data quality, and understanding of data, as well as to provide data needed for internal and external actuarial studies. This group would be responsible for the development of actuarial data bases and reporting tools to facilitate review and analysis by the actuarial resources. We also recommend that the Rate Adjustment Team transition to this group since much of the function surrounds data, including adjustment of employer and/or group claim experience and data management for MIRA, including the provision review and investigation of this data.
 - Rating – Continue the current function performed by the private employer and public employer (taxing districts and state agencies) teams, focusing on calculation of rates and ensuring accuracy. However, the current support that these teams provide around data gathering should be transitioned to the data management function as noted above. Additionally, any support provided to the review and validation of actuarial studies should be transitioned to the function responsible for rate level and programs pricing or the function responsible for reserving & net analyses.

- **Utilize external actuarial resources** to supplement actuarial resources, perform special analysis or deeper review, provide industry perspective and specific expertise, independent review of pricing and rate assumptions, and an annual second opinion on loss reserves and net asset levels. These resources will assist the BWC in meeting state and BWC Board requirements, and provide additional controls or support for the actuarial functions.

Proposed Long Term Organization and Suggested Staff Levels:



- **Establish an actuarial hiring and development program** to enhance its ability to attract and retain actuarial talent and to make this organizational expansion successful over time.
 - Create a job classification(s) for actuarial students which support professional requirements regarding exam passage and training by including the requirement to study and sit for exams, balanced with job performance and capabilities.
 - Provide study materials and pay for exam fees.
 - Foster an environment that exposes staff to different projects and functions to replace formal rotational program.
 - Focus recruiting efforts to mitigate competition with large, established private employers that can provide enhanced programs and pay scale.
 - Emphasize benefits and quality of life aspects of BWC employment.

Impact

The impact (high, moderate, or low) of these recommendations as they relate to the overarching themes is shown in the following table:

| | Effectiveness & Efficiency | Financial Strength & Stability | Transparency | Ohio Economic Impact |
|---|---|---|--|--|
| Establish Rating & Programs Pricing Team |  |  |  |  |
| Establish Reserving & Net Asset Level Analysis Function |  |  |  |  |
| Establish Data Management |  |  |  |  |
| Actuarial Hiring and Development Program |  |  | | |

Legend

| | | | | |
|---|---|---|-----------|---|
| High Impact | Moderate Impact | Low Impact | No Impact | Adverse Impact |
|  |  |  | |  |

The Deloitte Consulting team appreciates the time and effort dedicated by BWC constituents over the course of our discovery to help us understand the Actuarial Division and BWC organization.

Appendix A – Deliverable Matrix

Group 4 Study Elements

| |
|---|
| Actuarial Department Functions & Resources |
| Actuarial Department Organization |

| |
|--|
| Pricing Process |
| Individual Rate Calculation 1) Private Employers 2) Rating Rules and Laws a. Administrative Appeals b. Out-of-State Coming In |
| Minimum Administrative Premium |
| Alternative Pricing Methods (Including NCCI Classes) |
| Ancillary Funds |
| 1) Coal Workers Pneumoconiosis |
| 2) Marine Industry |
| 3) Disabled Workers Relief |

| |
|-------------------------------|
| Cost Controls |
| Rehabilitation Program |

Actuarial Department Functions & Resources Area

| Actuarial Department Functions & Resources | Tasks Involved |
|--|---|
| Actuarial Department Organization | 36. Compare and analyze the organization and the structure of the BWC's actuarial department to industry standards. This analysis should compare the BWC's actuarial department organization, structure, and staffing levels to industry standards, other state insurance funds and monopolistic state insurance funds. |

Pricing Process Areas

| Individual Rate Calculation | Tasks Involved |
|---|---|
| 1) Private Employers | 32. Evaluate and assess the experience aggregation approach used by the BWC compared to industry standards. The BWC currently tracks entities at the tax identification level versus a common or majority ownership of the company. This evaluation would identify industry standards in tracking employer ownership. |
| 2) Rating Rules and Laws a) Administrative Appeals | 14. Evaluate the changing of individual employer rates due to administrative appeals or clerical errors by the BWC. This evaluation would include a review of the rating rules and appeals process for employers. This analysis should include information on industry standards and process. |
| 2) Rating Rules and Laws a) Out-of-State Coming In | 16. Evaluate the BWC rules, laws, policies and procedures for rating and employer who is operating in another state and requests to be rated in Ohio. This evaluation would include the experience modifier selected, the use of other states experience, and the future liability for Ohio. |
| Minimum Administrative Premium | Tasks Involved |
| Minimum Administrative Premium | 5. Conduct an evaluation of the minimum administrative premium charged to employers operating in Ohio for worker's compensation coverage. This evaluation should determine the minimum acceptable amount of premium that should be charged to employers in Ohio to bind coverage and to cover expected losses. |
| Alternative Pricing Methods (including NCCI classes) | Tasks Involved |
| Alternative Pricing Methods (including NCCI classes) | 3. Review and make written recommendation of the BWC's use of the National Council on Compensation Insurance (NCCI) manual classification system for rating classifications. This review would include but not be limited to analysis of the assignment of classifications to employers, the process of employer's reporting payroll, the premium auditing process and the procedures for non-reporting of payroll. |

Pricing Process Areas – continued

| Ancillary Funds | Tasks Involved |
|----------------------------------|---|
| 1) Coal Workers Pneumoconiosis | 7. Review and make written recommendations with regard to the Coal-Workers Pneumoconiosis Fund. This review would include a complete analysis of the rating program. This analysis should compare the methodology used in BWC’s rating calculation to industry standards the actuarial standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. |
| 2) Marine Industry Fund | 10. Review and make written recommendations with regard to the Marine Industry Fund. This analysis should compare the methodology used in BWC’s rating calculation to industry standards and the Actuarial Standards of Practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. |
| 3) Disabled Workers’ Relief Fund | 13. Review and make written recommendations with regard to the Disabled Workers’ Relief Funds. This analysis would include a complete analysis of the funds including but not limited to the loss information, payroll information, and other rating calculations. This analysis should compare the methodology used in BWC’s rating calculation to industry standards and the Actuarial Standards of Practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. |

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