

**NEBRASKA HOSPITAL-MEDICAL LIABILITY ACT
EXCESS LIABILITY FUND**



**ANNUAL REPORT
As of December 31, 2017**

INTRODUCTION

The Excess Liability Fund (the Fund) is one of several Enterprise Funds maintained by Nebraska to account for operations that are financed and operated in a manner similar to private business enterprises—where the costs of providing goods and services to users are financed primarily through user charges.

The Fund is administered by the Nebraska Department of Insurance, as required by the Nebraska Hospital-Medical Liability Act (adopted in 1976). Revenues are mainly from surcharges paid by Nebraska health care providers participating voluntarily in the Excess Liability Fund. A small revenue stream comes from Nebraska health care providers unable to buy primary coverage from a licensed insurer. Expenses include administrative costs and payments to cover malpractice judgments or settlements against Fund members.

For health care providers that participate in the Fund, malpractice damages are statutorily capped at \$2.25 Million per plaintiff, per occurrence. In order to participate in the Fund, providers pay a premium (“the surcharge”) and submit proof of financial responsibility in the form of an underlying professional liability policy that pays \$500,000 per occurrence, with annual aggregate limits of \$3 Million for hospitals and \$1 Million for other health care providers. For each plaintiff, the Fund provides excess coverage above the underlying \$500,000, up to the \$2.25 Million cap.

The body of the report focuses on the Fund’s 2017 assets, operating results, liabilities and operating reserve. In this report, the terms “estimated” or “expected” refer to actuarially derived averages of possible future outcomes. The future may turn out to be significantly better or worse than our best current estimates and expectations. Supporting commentary and history are in Appendices A (on the Fund’s Reserves and Risks), B (the Fund’s limits and underlying coverage requirements) and C (historical surcharge rates).

FINANCIAL POSITION- Assets and Operations

The Fund began 2017 with assets of \$89.34 Million, and ended with \$90.49 Million. On a cash basis, the Fund received \$5.59 Million revenue, paid \$0.73 Million for ceded reinsurance, paid \$4.99 Million loss and loss adjustment expense, and paid \$0.28 Million administrative expenses. Underwriting cash flow (revenue net of reinsurance, minus the sum of paid losses and expenses) was minus \$415 Thousand, an improvement over minus \$7.09 Million in 2016. Investment Activity provided \$1.56 Million relief, and the Fund’s assets increased this year by \$1.15 Million. Table 1 shows ten years’ assets and operations on a cash basis.

The \$1.56 Million cash from 2017 Investment Activity comprised \$487 Thousand short term interest, \$811 Thousand long term interest, plus \$315 Thousand gain on long term investments, minus \$53 Thousand investment expense. As required by statute, the Fund’s assets are invested by the Nebraska Investment Council, which publishes investment policies and quarterly reports on its web site at <http://www.nic.ne.gov/>.

Table 1. Assets and Operations of the Fund -- Cash Basis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Calendar Year	Beginning Cash & Invested Assets	Cash Revenue Net of Reinsurance	Paid Loss and Loss Expense Net of Reinsurance	Administrative Expenses	Underwriting Cash Flow Net of Reinsurance	Investment Activity	Annual Change in Assets	Year End Cash & Invested Assets
2008	68,149,651	9,495,284	14,808,033	165,652	(5,478,401)	(497,649)	(5,976,050)	62,173,601
2009	62,173,601	9,298,293	5,857,305	185,933	3,255,054	9,681,857	12,936,912	75,110,513
2010	75,110,513	8,485,764	5,483,546	218,014	2,784,204	8,340,686	11,124,890	86,235,403
2011	86,235,403	5,313,025	4,355,554	188,727	768,744	2,868,206	3,636,951	89,872,354
2012	89,872,354	4,769,655	9,100,443	173,464	(4,504,251)	5,960,884	1,456,632	91,328,986
2013	91,328,986	4,849,128	4,799,715	185,739	(136,326)	7,214	(129,112)	91,199,874
2014	91,199,874	4,490,594	6,584,786	180,851	(2,275,043)	4,025,164	1,750,121	92,949,995
2015	92,949,995	4,768,232	5,961,007	254,576	(1,447,351)	1,186,121	(261,229)	92,688,766
2016	92,688,766	4,212,816	11,057,285	244,811	(7,089,280)	3,742,312	(3,346,969)	89,341,797
2017	89,341,797	4,860,418	4,991,220	284,614	(415,417)	1,561,334	1,145,917	90,487,714

FINANCIAL POSITION- Liabilities and Operating Reserve

Table 4 at the end of this section shows the Fund's Operating Reserve, which equals the Fund's Assets minus the Fund's Liabilities. The Fund's Liabilities include: 1) Claims Known to the Fund, 2) Claims Incurred But Not Reported (IBNR) to the Fund and 3) Unearned Premiums. These Liabilities are described below.

Claims Known to the Fund at 12/31/2017

The actuarially estimated unpaid liability for claims that have been presented to the Fund under Claims-Made coverage is \$18.687 Million. Adjusters' case estimates for the same claims add up to \$22.948 Million. Our best estimate for known claims as of 12/31/2017 is \$21.342 Million (see Table 2, Column (6) below).

In addition, for Excess Occurrence coverage and Primary Residual coverage, case estimates total \$0.755 Million, so the total Fund case reserve is \$23.198 Million. The total case reserve is down \$1.1 Million from \$24.280 Million at the close of 2016.

With respect to Claims-Made coverage, Table 2, below, shows historical report year experience evaluated as of 12/31/2017, net of the Fund's Common Loss reinsurance treaty.

The Common Loss reinsurance treaty was first effective on May 1, 2016 and so far, the Fund has ceded no loss or adjustment expenses. All treaty terms and conditions are specified in the reinsurance contract. Briefly stated, a common loss is the sum of all loss and loss adjustment expense directly associated with any one or a series of similar or related medical incidents. The Fund's retention per common loss is \$4.5 Million and the treaty limit is \$20.0 Million.

Table 2, Column (8) shows 14 years' ratios of ultimate net Claims-Made paid loss and claims expense to the Fund's Claims-Made net earned premium, with five and ten year totals. From report year 2011 through 2017, the estimated loss and claims expense ratios in column (8) have exceeded 100% of net earned premium, and the ten year ratio is 117.1%. This means a decade's estimated ultimate losses and claims expense exceeded earned premium by 17.1%. The five year ratio is now 193.0%, up from 191.0% at 2016, 136.0% at 2015, or 126.6% at 2014. The increases are primarily due to increased claims costs.

**Table 2. Actuarial, Adjusters' and Selected Reserve Estimates (000's)
Claims Made Coverage as of 12/31/2017 for Indemnity and Claims Expenses**

Report Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Net Claims Made Earned Premium (000's)	Actuarial Estimated Ultimate Net Claims-Made Incurred	Cum. RY Net Paid Indemnity and Expense	= (2) - (3) Actuarial Estimated Net Claims Made Reserve	Adjusters' Net Estimated Claims Made Case Reserves	Best Estimate Net Claims-Made Reserve	= (3) + (6) Best Estimate Ultimate Net Claims-Made Incurred	= (7) / (1) Estimated Ultimate Net Indemnity and Claims Expense Ratio
2004	9,321	8,002	8,002	-	-	-	8,002	85.8%
2005	10,679	12,163	12,163	-	-	-	12,163	113.9%
2006	11,461	11,100	11,100	-	-	-	11,100	96.8%
2007	10,513	7,276	7,276	-	-	-	7,276	69.2%
2008	9,446	3,870	3,870	-	-	-	3,870	41.0%
2009	8,638	4,574	4,574	-	-	-	4,574	53.0%
2010	8,783	5,555	5,620	(65)	-	-	5,620	64.0%
2011	6,878	9,635	9,818	(182)	-	-	9,818	142.7%
2012	4,917	5,240	3,984	1,256	1,398	1,341	5,325	108.3%
2013	4,627	5,895	5,757	138	500	355	6,112	132.1%
2014	4,338	8,124	7,679	444	2,250	1,528	9,207	212.2%
2015	4,408	7,806	4,625	3,181	3,450	3,342	7,967	180.7%
2016	3,721	9,429	1,450	7,979	9,550	8,922	10,372	278.7%
2017	4,106	7,345	1,410	5,935	5,800	5,854	7,264	176.9%
5 Yrs	21,200	38,599	20,921	17,678	21,550	20,001	40,922	193.0%
10 Yrs	59,863	67,474	48,787	18,687	22,948	21,342	70,129	117.1%

The difference between Columns (5) (adjusters' net reserves) and (6) (best estimate net Claims-Made reserves) means we expect case reserves to provide for Claims-Made claims reported to the Fund as of 12/31/2017, with \$1.61 Million to spare, partially providing for the Fund's IBNR. The supporting actuarial analysis is not published with this report, but Appendix A includes an outline of the actuarial analysis and its uncertainties.

Claims Incurred but Not Reported (IBNR) to the Fund

Table 2 addressed the liability for claims already presented to the Fund through 12/31/2017. The Fund also bears liability for certain claims expected to emerge later:

- 1) Claims-Made IBNR: The Fund's Excess coverage follows participants' primary coverage, which is generally on a Claims-Made basis. When written by a primary insurer, Claims-Made coverage by definition should generate no IBNR claims. The Fund, however, will wait while the primary carrier records a claim, investigates it, prepares to defend its policyholder, and in setting case reserves identifies it as one of the few likely to exceed the Fund threshold. I estimate this waiting time to average 3 months, and this portion of the Fund's IBNR to be \$2.05 Million.
- 2) Occurrence IBNR: A small volume of occurrence coverage is underwritten by primary insurers including the Fund's Residual Authority. The Fund estimates the associated IBNR at 2017 to total

\$538 Thousand. The estimated components are \$318 Thousand for primary residual losses and adjustment expenses and \$220 Thousand for the Fund's IBNR liability for excess occurrence coverage.

- 3) **Tail IBNR:** "Tail" or "extended reporting endorsement" coverage is provided by the Fund, excess over primary insurers' tail coverage. Typically, the insured pays for tail coverage when switching insurers, but "free tail" coverage is issued when the insured retires, dies or becomes disabled. As of 2017, we estimate the Fund's liability for issued tail coverage to be \$1.370 Million.
- 4) As stated above, we expect adjusters' case reserves to provide for all Claims-Made claims reported to the Fund as of 12/31/2017, with \$1.61 Million extra to partially provide for the Fund's IBNR.

Adding 1), 2) and 3), then subtracting 4), our estimate of the Fund's 2017 IBNR liability is \$2.34 Million. Supporting actuarial exhibits are not published with this report, but Appendix A includes discussion of the IBNR analysis and its uncertainties.

Unearned Premiums

Before 2016, the Fund's unearned premium reserve estimate was half of its annual revenue or written premium. In 2016, the Fund began buying reinsurance and initiated reinsurance accounting. Also in 2016, the Fund began accounting for Death, Disability and Retirement (DDR) reserves within unearned premium, which prompted the Fund to make separate unearned premium calculations for DDR, Paid Tail, Excess Claims Made, Excess Occurrence and Primary Residual coverages. The estimated unearned premium reserve, starting with 2016, is the sum of those components. Table 3 shows summarized results:

Table 3. Written and Earned Premium, and Unearned Premium Reserve

Calendar Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Direct Written Premium	Reinsurance Ceded Written Premium	Net Written Premium	Est. Net Earned Premium	Est. Net Unearned Premium Reserve	Historical Est. Unearned Premium Reserve	Effect of Change in Methods on Unearned Premium
2007	11,233,501	0	11,233,501	12,222,160	5,402,945	5,203,546	199,398
2008	9,341,923	0	9,341,923	10,437,015	4,307,853	4,747,642	(439,789)
2009	9,255,477	0	9,255,477	9,263,163	4,300,166	4,649,146	(348,980)
2010	9,590,353	0	9,590,353	9,350,690	4,539,829	4,734,385	(194,556)
2011	5,341,757	0	5,341,757	7,425,343	2,456,243	2,656,512	(200,269)
2012	5,263,830	0	5,263,830	5,291,452	2,428,621	2,384,828	43,794
2013	4,820,225	0	4,820,225	4,956,815	2,292,032	2,424,564	(132,532)
2014	4,794,131	0	4,794,131	4,673,442	2,412,720	2,245,297	167,423
2015	4,741,048	0	4,741,048	4,847,612	2,306,156	2,384,116	(77,960)
2016	4,974,747	800,000	4,174,747	4,008,104	3,252,800	2,406,408	846,392
2017	5,491,675	533,333	4,958,342	4,312,660	3,898,481	2,796,876	1,101,606

Column (7) shows that the change in methods was material for 2016 and 2017. To summarize the Fund's Operating Reserve history in Table 4 (below), I used the historical estimates in column (6) for years 2015 and prior, and the new methods' estimates in column (5) starting with 2016.

The Fund's Operating Reserve

The operating reserve equals year-end assets minus estimated year-end liabilities. Maintaining a strong operating reserve is one prudent method of addressing future uncertainties such as unanticipated fluctuations in claim costs, operational expenses or investment activity.

At 2017, the Fund's operating reserve is up \$1.10 Million, from \$59.43 Million to \$60.54 Million. This is welcome after losing over \$10 Million in 2016.

Table 4. The Fund's Operating Reserve

	(1)	(2)	(3)	(4)	(5) = (1) - (2) - (3) - (4)	(6)
Calendar Year	Year End Fund Assets	Unpaid Reported Loss & LAE	IBNR	Unearned Premiums	Operating Reserve	Annual Change
2005	60,348,010	23,908,903	1,890,476	6,399,623	28,149,007	1,456,300
2006	63,824,295	23,730,729	1,362,560	6,233,175	32,497,830	4,348,822
2007	68,149,651	26,035,559	1,027,209	5,203,546	35,883,336	3,385,506
2008	62,173,601	15,346,197	977,241	4,747,642	41,102,521	5,219,185
2009	75,110,513	14,637,643	978,127	4,649,146	54,845,596	13,743,076
2010	86,235,403	14,772,762	1,000,000	4,734,385	65,728,256	10,882,660
2011	89,872,354	20,327,494	2,305,362	2,656,512	64,582,985	-1,145,271
2012	91,328,986	19,275,299	1,630,000	2,384,828	68,038,860	3,455,875
2013	91,199,874	17,954,231	1,350,000	2,424,564	69,471,079	1,432,219
2014	92,949,995	15,495,242	1,720,000	2,245,297	73,489,456	4,018,378
2015	92,688,766	17,522,088	2,140,000	2,384,116	70,642,561	-2,846,895
2016	89,341,797	24,819,871	1,835,129	3,252,800	59,433,997	-11,208,564
2017	90,487,714	23,703,004	2,344,009	3,898,481	60,542,220	1,108,223

The ideal operating reserve for the Fund can be debated, but it clearly must be a significant amount. The operating reserve has been above \$35 Million since 2007, and at 2014 it peaked at \$73.5 Million. After decreases of \$2.8 Million in 2015 and \$11.2 Million in 2016 and a \$1.1 Million recovery in 2017, the operating reserve is currently below where it stood at 2010.

Two important forces drove the Fund's operating reserve to its peak at 2014. First, the Fund's investment activity in 2009-2010 reflected bond prices' recovery from losses in 2008, and second, the Fund's loss ratios were under 70% from 2007-2010 (see Table 2). Those forces no longer operate in the Fund's favor. Bonds now typically produce low yields and their value in the market is vulnerable to increasing interest rates. The Fund's Excess Claims Made coverage has produced a significant underwriting loss every year since 2013.

2017 was better than 2016, with paid claims and related expenses down 55% from 11.06 Million to \$4.99 Million, and adjusters' case reserves down slightly by \$1.1 Million. Yet, estimated 2015, 2016 and 2017 report year loss ratios are respectively 181%, 279% and 177% of the Fund's earned premium. As anticipated results have deteriorated, the Fund's surcharge rate has increased from 22% of underlying primary premium in 2015 to 26% in 2016 and 40% in 2018.

Questions? – Contact Gordon Hay, Gordon.Hay@nebraska.gov, Nebraska Department of Insurance, PO Box 82089, Lincoln, NE 68501-2089.

Appendix A. COMMENTARY – Reserves and Risks

This appendix covers four topics. The first topic is data organization, and how it was refined in 2015. The second topic is actuarial methods and risks in estimating the Fund's liability for known claims on Claims-Made coverage. The third topic is actuarial reserving for IBNR claims. The fourth topic is additional actuarial disclosures.

The Department's actuarial work was performed by Gordon Hay, Senior Casualty Actuarial Examiner within the Department, who is a Fellow of the Casualty Actuarial Society, Member of the American Academy of Actuaries, and Chartered Property and Casualty Underwriter.

Data Organization Refined at 12/31/2015

Before 2015, the Fund's entire loss history, including combined Excess and Primary Residual business, was grouped by report-year to estimate the adequacy of case reserves for known claims. This involved an assumption that occurrence coverage (including Primary Residual) always made a negligible contribution to the body of experience. The same data was then regrouped by accident-year for IBNR analysis. That IBNR analysis rested in part on two key assumptions: 1) that 16% of Fund business was due to occurrence coverage and 2) that the actual emergence of historical claims did not depend on whether the claims arose from Claims-Made versus occurrence coverage. While such underlying assumptions were not unreasonable, it was difficult to validate them and strictly not possible to reconcile them.

The solution at 2015 year end was to divide the historical data into three segments: excess Claims-Made, excess occurrence and residual primary. This data segmentation was possible for premium data as of the current accounting date and loss data for the years 2010, 2011, 2012, 2013, 2014 and 2015. The result is a workable volume of excess Claims-Made data, but small volumes of excess occurrence and residual primary data. The impact on analysis and methods at 2015 was as follows:

- For the excess Claims-Made analysis, the "15 year least-squares regression method" was deleted. The 2014 Annual Report described that method. Briefly, the method relied on loss evaluations at age 12 months that are not available from the reorganized data.
- For the excess Claims-Made analysis, the "5 years least-squares method" was modified and renamed "3 years least-squares method." The credibility complement, previously using a five-year moving average, was changed to a three-year moving average.
- IBNR estimations for excess occurrence and primary residual business were separated and calculated using their own data from the Fund's history.
- Prior to 2015, a reserve provision for "Tail" or "Extended Reporting Endorsement" (ERE) coverage was implicit in the 16% assumption described above. At 2015 we began making explicit reserve estimates for "Tail" coverage. The reserve analysis for known claims includes provision for Tail or ERE claims that have already been reported to the Fund. The new estimates provide for claims expected to emerge in the future due to 1) "Free Tail" coverage commitments already made (typically issued only when the insured ultimately retires, dies or becomes disabled), 2) "Paid Tail" coverage that has already been issued and 3) "Free Tail" coverage that has already been issued.

Known Claims on Claims-Made Coverage

The estimates in Column (2) of Table 2, in the body of the report above, summarize results of applying multiple actuarial methods to Fund data accumulated since July, 1976.

Statistical and predictive challenges are inherent in actuarial analysis of claims data, and estimates of future payouts may turn out to be insufficient. The Fund may suffer from years of bad experience, and did so in 2002, largely due to about \$9.3 Million from a Hepatitis “C” outbreak that arose at a clinic in Fremont. The Fund’s most obvious viability concern is one or more many-defendant/many-plaintiff cases.

A stable environment contributes to certainty in actuarial estimates, but the medical malpractice insurance environment has been dynamic and at times very challenging actuarially. During the Fund’s history, Claims-Made coverage has almost replaced occurrence coverage, reducing the Fund’s exposure to IBNR. Insurance markets are not always healthy, but in recent years Nebraska medical malpractice insurance has been profitable. Ever-changing health care provider practices including risk management improvements should help contain insurance costs. Reversals on any of these fronts could cause increases in cost that erode the adequacy of an actuarial estimate.

Alternative estimates of each report year’s future ultimate payout for known claims appear on Table 5 below. Three actuarial methods shown in Columns (1) to (4) support this year’s actuarial known claims estimates, with Column (5) showing the actuary’s selection based on results from the three methods:

- 1) Traditional paid loss and ALAE development method: This assumes that over time, the future paid loss and ALAE as a report year matures will be similar to historical paid loss and ALAE as previous report years matured. This method’s estimated ultimate loss and expense (‘000’s) by report year are shown in Column (1) of Table 5.
- 2) Traditional reported loss and ALAE development method: Adjusters’ case reserves are added to cumulative paid-to-date data prior to measuring development. This assumes that adjusters’ case reserving practices and estimates have been consistent over time. Case reserving was not consistent over the Fund’s early history, but appears to have been consistent since at least 2006. This method’s estimated ultimate loss and expense (000’s) by report year are shown in Column (2) of Table 5.
- 3) 3 Years Least-squares regression method – primary premium basis: Least-squares estimation (LSE) uses a weighted average of two measures: first an estimated ultimate amount from a traditional loss-and-ALAE development method, and second, an average ultimate amount from previous report years. Both measures are taken in units of loss and ALAE per dollar of Fund participants’ primary written premium. The actuary avoided dividing losses by the Fund’s revenue because that revenue reflects the surcharge rates. The Least-Squares-Estimate of the report year’s ultimate amount is a weighted average of the two measures, with the weight on the first measure being great when there was high correlation between historical report years’ cumulative loss and ALAE at a given age and historical ultimate amounts. This method is applied to three-year histories of the Fund’s paid versus reported loss ratios to primary premium. This method’s estimated ultimate loss and expense (000’s) by report year are shown in Column (3) for paid data and Column (4) for reported data.

**Table 5. Actuarial, Adjusters' and Selected Reserve Estimates (000's)
Claims Made Coverage Known Claims as of December 2017**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					** See Note.		= (5) - (6)		*** See Note
Report Year	Paid LDF Ult. Dollars	Reported LDF Ult. Dollars	3 Year Paid LSE Method Ult. - Primary Revenue Base	3 Year Reported LSE Method Ult. - Primary Revenue Base	Selected Ult. Incurred Indemnity & Expense	Cumulative Report Year Paid Indemnity and Expense	Actuarially Estimated Known Claims Reserve	Adjusters' Estimated Case Reserves	Selected Best Estimate Known Claims Reserve
1995	2,292	2,292			2,292	2,292	-	-	-
1996	2,558	2,558			2,558	2,558	-	-	-
1997	2,478	2,478			2,478	2,478	-	-	-
1998	2,931	2,931			2,931	2,931	-	-	-
1999	6,946	6,946			6,946	6,946	-	-	-
2000	7,977	7,977			7,977	7,977	-	-	-
2001	7,362	7,362			7,362	7,362	-	-	-
2002	13,069	13,069			13,069	13,069	-	-	-
2003	6,767	6,767			6,767	6,767	-	-	-
2004	8,002	8,002	8,002	6,883	8,002	8,002	-	-	-
2005	12,163	12,163	12,163	11,192	12,163	12,163	-	-	-
2006	11,100	11,100	11,100	9,504	11,100	11,100	-	-	-
2007	7,276	7,276	7,276	6,932	7,276	7,276	-	-	-
2008	3,870	3,870	3,870	3,833	3,870	3,870	-	-	-
2009	4,574	4,574	4,574	4,747	4,574	4,574	-	-	-
2010	5,632	5,555	5,632	5,384	5,555	5,620	(65)	-	-
2011	9,838	9,635	9,838	9,698	9,635	9,818	(182)	-	-
2012	4,019	5,240	3,988	9,740	5,240	3,984	1,256	1,398	1,341
2013	5,879	5,911	5,839	5,879	5,895	5,757	138	500	355
2014	8,993	9,709	8,301	6,539	8,124	7,679	444	2,250	1,528
2015	8,266	7,325	6,745	8,286	7,806	4,625	3,181	3,450	3,342
2016	5,029	11,240	5,197	7,619	9,429	1,450	7,979	9,550	8,922
2017	43,442	7,487	5,511	7,203	7,345	1,410	5,935	5,800	5,854
10 Years	99,542	70,547	59,494	68,927	67,474	48,787	18,687	22,948	21,342

Note: The current case reserves total 22.95 Million compared to an estimated ultimate 21.34 Million required. I expect this estimated case reserve redundancy to fund 1.61 Million of the Fund's IBNR liabilities.

** Selected = (2) for Rep'tYrs 1994-2012, avg. of (2) and (4) for Rep't Yrs 2013-2017.

*** Selected = zero for Report Years 1994-2011 (no open claims remain) and 60% (8) vs. 40% (7) for Report Years 2012-2017.

In all cases, the actual ultimate payouts will differ from the estimates. For any given report year, or for all report years combined, it is possible that actual ultimate payouts will exceed, even significantly exceed actuarial estimates, adjusters' case estimates, or both.

Both actuarial and adjusters' estimated reserves, shown in Columns (7) and (8), are reasonable. However, actuarial methods' estimates vary most for report years 2015-2017, reflecting uncertainty when using low-volume data from the least mature report years. In earlier years, it would be prudent to give consideration to adjusters' estimates for any cases still pending. For the least mature report years (2015-2017) adjusters' case estimates have historically been a bit conservative so some credence is due to the lower actuarial estimates

for recent years. At 2017, an effective balance is achieved in Column (11) of Table 5, by placing 40% weight on actuarial and 60% weight on adjusters' estimates for historical report years with any unpaid claims.

IBNR

IBNR Summary

IBNR components are described below. The Excess Fund components total \$3.64 Million, which is partially offset by an estimated \$1.61 Million excess of adjuster's case reserves over the amount required, leaving an IBNR provision of \$2.03 Million. We add \$318 Thousand estimated IBNR for Primary Residual business. The resulting \$2.34 Million is the Fund's 2017 carried IBNR, which appears in Table 4 Column (3).

The supporting IBNR analyses are subject to uncertainties, including the usual statistical and predictive challenges inherent in actuarial analysis of claims data, dynamic factors in medical malpractice insurance outlined above.

Excess Claims-Made Coverage: Lagged reporting to Fund

Since Claims-Made coverage by definition responds to claims reported within the policy period, there would logically be no IBNR. Assuming this is so at the primary carrier level, the Fund nevertheless waits for claim reports while primary carriers record, investigate, and at some point identify the few cases they present as claims to the Fund. The Fund cannot measure those elapsed times, because the Fund's actuarial data does not capture primary carriers' claim report dates. I roughly estimate the average delay to be 3 months. At 2017, this amounts to 25% of an average report year's loss or about \$2.05 Million of IBNR liability for excess claims-made coverage.

Excess Occurrence Coverage

In the absence of sufficient Fund data to support an independent analysis, it is reasonable to assume the Fund's losses will develop similarly to the industry. I used development history from leading Medical Professional Liability insurers with a combined 78% share of the 2015 Nebraska market, to derive estimated industry loss development factors (LDF's). I used traditional paid loss development, traditional reported loss development and Bornhuetter-Ferguson (BF) methods. In the traditional methods, I applied the industry paid LDF's to the Fund's excess occurrence paid-to-date data, and industry reported LDF's to the Fund's occurrence reported-to-date data. The BF methods also apply separately to paid and reported data. To support these methods, I used expected losses that are equal to earned premium times a conservative 60% loss ratio. I also used the industry loss emergence patterns to estimate, for each accident year, the unpaid percent of ultimate for the paid BF method and un-emerged percent of ultimate for the reported BF method. Then, in the Paid BF method, for each accident year the estimated ultimate paid loss equals paid-to-date plus the product of expected losses and the unpaid percent of ultimate. For the Reported BF method, for each accident year the estimated ultimate reported equals reported-to-date plus the product of expected losses and the un-emerged percent of ultimate. For each of these methods (traditional paid LDF, traditional reported LDF, paid BF and reported BF), the estimated IBNR equals estimated ultimate minus reported-to-date. From these multiple methods, a selection must be made. My selected IBNR liability estimate is \$220 Thousand for excess occurrence coverage.

Extended Reporting Endorsements (Tail Coverage)

As stated above, "Tail" or "Extended Reporting Endorsement" (ERE) coverage arises when a Claims-Made insured switches insurers, retires, dies, or becomes disabled. The reserve analysis for known claims includes provision for ERE claims that have already been reported to the Fund. Additional provisions are needed for

claims expected to emerge in the future due to 1) “Free Tail” coverage commitments already made but with coverage to be issued only in the future when the insured retires, dies or becomes disabled, 2) “Paid Tail” coverage that has already been issued and 3) “Free Tail” coverage that has already been issued.

The reserving methods are quite specialized. Briefly, for the issued tail policies (combination of 2) and 3)), the liability is estimated by accident year and the accident years’ contributions are summed. Each accident year’s contribution equals expected losses on issued tail policies times a percent unreported factor. The expected losses are derived by multiplying each accident year’s issued tail policy count by an appropriate estimated pure premium, and the percent unreported factors are derived from industry loss development patterns. My estimated liability for issued tail policies is \$1.370 Million.

For the yet-to-be-issued “Free Tail” policies, the liability is estimated by accident years and the accident years’ contributions are summed. Each accident year’s contribution equals expected losses on an occurrence basis for all providers inforce at the time, multiplied by a percent unreported factor, and further multiplied by the estimated combined frequency of death, disability and retirement. The expected losses are derived by multiplying inforce exposure counts by an appropriate estimated pure premium, and the percent unreported factors are derived from industry loss development patterns. My estimated liability for yet-to-be-issued “Free Tail” policies is \$1.020 Million. At 2016, I removed the “Free Tail” provision from IBNR and included it within Unearned Premium Reserves.

Primary Residual (Occurrence) Coverage

The methods and assumptions for Primary Residual data are identical to those for excess occurrence data, except for the BF methods I used an experience-based assumed loss ratio of 42.4% to calculate expected losses. My selected IBNR liability estimate is \$318 Thousand for primary residual occurrence coverage.

Actuarial Disclosures

The Fund’s Annual Report is an Actuarial Report within the definition stated in Section 2.4 of Actuarial Standard of Practice No. 41 *Actuarial Communication*. The findings herein include unpaid claim estimates, so applicable standards include Actuarial Standard of Practice No. 43 *Property/Casualty Unpaid Claim Estimates*. In addition to commentary elsewhere in this Annual Report, the following formal disclosures are required under Actuarial Standards of Practice No. 41 and 43:

I, Gordon Hay, am Sr. Casualty Actuarial Examiner for the Nebraska Department of Insurance. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

The actuarial report comprises the following documents:

- This Annual Report
- The excel file “Summary Exhibits 20180330.xlsx”
- The excel file “Residual Primary Analysis 20180327.xlsx”
- The excel file “CM & OCC Analyses 20180327.xlsx”
- The excel file “Tail Reserves 20180328.xlsx”
- The excel file “Earned Premium and UEPR 20180328.xlsx”

This Annual Report’s intended users are the Director of the Nebraska Department of Insurance, affected Nebraska professional trade associations, medical professionals who are eligible to participate in the Fund, interested legislators, and interested members of the Nebraska general public.

From an actuarial standpoint, the scope and intended purpose is to review the estimated liabilities of the Excess Liability Fund as of December 31, 2017. The Fund's 2017 Annual Report depends on such actuarially estimated liabilities.

In reviewing the Fund's estimated liabilities at year end 2017, I relied on the following information:

- Historical premium data for the Fund, from 1998 through 2017 evaluated at 3/27/2018, provided by Mark Peterson, I.S. Analyst, Nebraska Department of Insurance
- Annual claims lists with information dates December 31, 2010, 2011, 2012, 2013, 2014, 2015, 2016 and 2017 provided by Michael Davlin, claims administrator for the Fund.
- Cash basis accounting summaries for the Fund provided by Randall Willey, Accounting and Finance Manager, Nebraska Department of Insurance

Appendix B. History of Underlying Coverage Requirements and the Cap

To participate in the Fund, a health care provider must submit proof of financial responsibility in the form of an underlying professional liability policy with specified coverage limits and pay a premium (“the surcharge”) to the Fund. Following widespread practice in general liability insurance, the underlying required limits are expressed in two amounts separated by a slash mark. The first applies under a provider’s policy per occurrence, and the second is an annual aggregate limit for two or more occurrences. The Nebraska Hospital-Medical Liability Act also establishes a cap on the damages any single plaintiff could recover from all qualified health care providers. The Legislature has updated the underlying policy limit requirements and the damages cap over the years:

- When the Fund was established in 1976, these limits were set at \$100,000/300,000 for physicians and nurse anesthetists and \$100,000/1,000,000 for hospitals, with a \$500,000 cap on the amount a plaintiff could recover from all qualified health care providers.
- LB 692 passed by the 1984 Legislature raised the cap to \$1,000,000 for incidents occurring after January 1, 1985.
- LB 1005 passed by the 1986 Legislature increased the amount of required underlying insurance to \$200,000/600,000 for physicians or nurse anesthetists and \$200,000/1,000,000 for hospitals effective January 1, 1987.
- LB 1006 passed by the 1992 Legislature then raised the cap to \$1,250,000 for incidents occurring after January 1, 1993.
- LB 146 passed by the 2003 Legislature raised the cap to \$1,750,000 for incidents occurring after January 1, 2004.
- LB 998 in 2004 raised the underlying coverage requirement to \$500,000/\$1,000,000 for all providers other than hospitals, and to \$500,000/\$3,000,000 for hospitals. The effective date of this change was the date of the provider’s first qualification on or after January 2, 2005.
- LB 961 in 2014 raised the cap to \$2,250,000 for any occurrence after December 31, 2014. This increases the Fund’s actuarially estimated future average claim severity by 8.1%.

Appendix C. History of Surcharge Rates

<u>Hospital Surcharge</u>	<u>Time Period</u>	<u>Surcharge for Physicians & Others</u>
15%	Original	50%
10%	1/1/1981	25%
1%	1-1-82 - 12-31-84	1%
50%	1-1-85 - 12-31-87	50%
50%	1/1/1988	45%
45%	1/1/1989	45%
40%	1/1/1990	40%
35%	1/1/1991	35%
40%	1-1-92 - 12-31-93	40%
30%	1-1-94 - 12-31-94	30%
15%	1-1-95 - 12-31-95	30%
10%	1-1-96 - 12-31-96	10%
5%	1-1-97 - 12-31-00	5%
20%	1-1-01 - 12-31-01	20%
35%	1-1-02 - 12-31-02	35%
50%	1-1-03 - 12-31-05	50%
45%	1-1-06 - 12-31-06	45%
40%	1-1-07 - 12-31-07	40%
35%	1-1-08 - 12-31-10	35%
20% (corrected from 2010 Rep't)	1-1-11 - 12-31-2012	20%
18%	1-1-13 - 12-31-2014	18%
20%	1-1-15 - 12-31-2015	20%
22%	1-1-16 - 12-31-2016	22%
26%	1-1-17 - 12/31/2017	26%
40%	1-1-18 - until revised	40%

A 50% surcharge, the maximum allowed by the Act, was instituted by the Department when the Act was first put into effect to build a fund to pay claims. The Legislature did not provide any seed money for this purpose. In 1984, the Fund paid its first six claims. As originally written, the Act placed a statutory cap of \$5 million on the Fund's assets, and as the Fund's assets approached \$5 million in 1980, the surcharge for 1981 was reduced. A further reduction to the minimum surcharge of 1% was made for 1982 as the amount in the Fund exceeded \$5 million. LB 692 passed during the 1984 Legislature allowed the Fund's assets to anticipate future claim costs. Following that, the surcharge was raised to 50% (the maximum allowed by the Act) for all categories effective January 1, 1985. The surcharge rate was reduced in succeeding years as experience was favorable and the total assets of the Fund increased. Starting with January 1, 2001 surcharge rates increased as the Fund's losses were increasing significantly, and past loss reserves were developing unfavorably. The surcharge rate rose to the maximum 50% between 2000 and 2003.

LB 998, passed in 2004, increased the underlying coverage requirement to \$500,000 per occurrence from \$200,000 on a phased-in basis during 2005. Reductions to the surcharge rate followed, as low as 18% from 2013-2014. In 2014, LB 961 raised the damages cap per plaintiff to \$2,250,000.

The increase in surcharge from 22% to 26% at 1/1/2017 was intended to commence using surcharge revenue to fund reinsurance (the Fund's Common Loss Treaty, initially effective 5/1/2017).

Table 6. Surcharge Rates and Voluntary Participation

	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) X (4)	(5)	(6) = (5) / (4)
Calendar Year	Medical Professional Direct Premiums Written (excl. Residual Primary)	Residual Primary Direct Written Premiums	Medical Professional Direct Premiums Written	Nebraska Excess Liability Fund Surcharge Rate	Fund Excess Written Premium at 100% Participation Would Be:	Actual Nebraska Excess Fund Written Premium	Actual Market Participation (Written Premium Basis)
2002	26,540,646	773,939	27,314,585	35%	9,560,105	6,326,199	66.17%
2003	32,008,670	725,145	32,733,815	50%	16,004,335	9,837,031	61.46%
2004	34,071,147	765,999	34,837,146	50%	17,035,574	10,159,778	59.64%
2005	36,804,243	1,395,503	38,199,746	50%	18,402,122	12,452,392	67.67%
2006	37,643,926	1,229,964	38,873,890	45%	16,939,767	12,499,080	73.79%
2007	36,964,825	705,020	37,669,845	40%	14,785,930	10,528,481	71.21%
2008	35,935,098	491,138	36,426,236	35%	12,577,284	8,850,785	70.37%
2009	36,400,709	387,184	36,787,893	35%	12,740,248	8,868,293	69.61%
2010	36,885,608	488,784	37,374,392	35%	12,909,963	9,101,569	70.50%
2011	36,321,600	297,420	36,619,020	20%	7,264,320	5,044,337	69.44%
2012	35,474,134	225,838	35,699,972	20%	7,094,827	5,037,992	71.01%
2013	36,601,858	197,939	36,799,797	18%	6,588,334	4,622,286	70.16%
2014	34,629,414	342,975	34,972,389	18%	6,233,295	4,451,156	71.41%
2015	33,171,281	293,684	33,464,965	20%	6,634,256	4,447,364	67.04%
2016	31,717,384	174,639	31,892,023	22%	6,977,824	4,800,108	68.79%
2017	32,096,874	123,695	32,220,569	26%	8,345,187	5,367,980	64.32%
5 Years	168,216,811	1,545,465	169,349,743	21%	34,778,897	23,688,894	68.11%
15 Years	526,726,771	12,617,685	534,571,698	32%	170,533,266	116,068,633	68.06%

This table was refined in the 2015 Annual Report. In particular, we replaced the Fund’s calendar year cash revenue with written premium (i.e. revenue grouped by calendar year using policy effective dates).

In comparing the Surcharge Rates in column (4) with the Actual Market Participation rates in column (6), it stands to reason that very low surcharge rates might encourage market participation whereas maximum 50% surcharge rates (2003 to 2005) might have discouraged participation. Since the 2005 implementation of LB 998, the participation rate has settled near 70%. Participation from about 2006 to 2016 was apparently not very sensitive to the Department’s selected surcharge rate, but in 2017, participation appears to have dropped to about 64%, four points below the long-term average.

Note that in 2015, the cap on recovery per plaintiff increased to \$2.25 Million, and the surcharge rate was 20%. The surcharge rate for 2016 was 22%, and for 2017, due to reinsurance cost, it was 26%. Due to persistently adverse and worsening experience, the 2018 surcharge rate is 40%.