

SERFF Tracking Number: AMMA-125885370 State: Arkansas  
Filing Company: Amica Mutual Insurance Company State Tracking Number: EFT \$25  
Company Tracking Number: AR-A-08-2-IC  
TOI: 19.0 Personal Auto Sub-TOI: 19.0001 Private Passenger Auto (PPA)  
Product Name: AR-A-08-2-IC  
Project Name/Number: Rule Revision/

## Filing at a Glance

Company: Amica Mutual Insurance Company

Product Name: AR-A-08-2-IC

TOI: 19.0 Personal Auto

Sub-TOI: 19.0001 Private Passenger Auto  
(PPA)

Filing Type: Rule

SERFF Tr Num: AMMA-125885370 State: Arkansas

SERFF Status: Closed

Co Tr Num: AR-A-08-2-IC

Co Status: pending

Authors: Brenda Miller, Carol  
Pedro, Brenda Walker, Christina  
Perfetti

Date Submitted: 11/21/2008

State Tr Num: EFT \$25

State Status: Fees verified and  
received

Reviewer(s): Alexa Grissom, Betty  
Montesi

Disposition Date: 12/11/2008

Disposition Status: Filed

Effective Date Requested (New): 06/01/2009

Effective Date Requested (Renewal): 06/01/2009

Effective Date (New): 06/01/2009

Effective Date (Renewal):

State Filing Description:

## General Information

Project Name: Rule Revision

Project Number:

Reference Organization:

Reference Title:

Filing Status Changed: 12/11/2008

State Status Changed: 12/02/2008

Corresponding Filing Tracking Number:

Filing Description:

Your records will indicate that Amica's current rating plan uses credit scores as one of the rating variables. The records will further show that Amica uses the Preferred Auto3.0 07 02 credit score model to determine the credit scores.

We wish to file an Amica Credit Evaluation Systems (ACES) scoring model developed by Equifax, for our use effective June 1, 2009. Please note that we have filed the same model for Homeowners in SERFF Number AMMA-125885371

SERFF Tracking Number: AMMA-125885370 State: Arkansas  
 Filing Company: Amica Mutual Insurance Company State Tracking Number: EFT \$25  
 Company Tracking Number: AR-A-08-2-IC  
 TOI: 19.0 Personal Auto Sub-TOI: 19.0001 Private Passenger Auto (PPA)  
 Product Name: AR-A-08-2-IC  
 Project Name/Number: Rule Revision/

and Personal Umbrella in SERFF Number AMMA-125886048.

Enclosed is information which explains the new model that Amica will use to calculate the credit scores. Please do not hesitate to contact us should you require additional information about this new model.

## Company and Contact

### Filing Contact Information

Brenda Walker, Sr. Regulatory/Compliance      bwalker@amica.com  
 Anlys  
 P.O. Box 6008      (800) 652-6422 [Phone]  
 Providence, RI 02940      (401) 334-6518[FAX]

### Filing Company Information

Amica Mutual Insurance Company	CoCode: 19976	State of Domicile: Rhode Island
P.O. Box 6008	Group Code: 28	Company Type:
Providence, RI 02940	Group Name:	State ID Number:
(800) 652-6422 ext. [Phone]	FEIN Number: 05-0348344	

-----

## Filing Fees

Fee Required?      Yes  
 Fee Amount:      \$25.00  
 Retaliatory?      No  
 Fee Explanation:  
 Per Company:      No

COMPANY	AMOUNT	DATE PROCESSED	TRANSACTION #
Amica Mutual Insurance Company	\$25.00	11/21/2008	24091022

SERFF Tracking Number: AMMA-125885370 State: Arkansas  
 Filing Company: Amica Mutual Insurance Company State Tracking Number: EFT \$25  
 Company Tracking Number: AR-A-08-2-IC  
 TOI: 19.0 Personal Auto Sub-TOI: 19.0001 Private Passenger Auto (PPA)  
 Product Name: AR-A-08-2-IC  
 Project Name/Number: Rule Revision/

## Correspondence Summary

### Dispositions

Status	Created By	Created On	Date Submitted
Filed	Alexa Grissom	12/11/2008	12/11/2008

### Objection Letters and Response Letters

Objection Letters				Response Letters		
Status	Created By	Created On	Date Submitted	Responded By	Created On	Date Submitted
Pending	Alexa Grissom	12/04/2008	12/04/2008	Brenda Walker	12/08/2008	12/08/2008
Industry Response						

*SERFF Tracking Number:* AMMA-125885370

*State:* Arkansas

*Filing Company:* Amica Mutual Insurance Company

*State Tracking Number:* EFT \$25

*Company Tracking Number:* AR-A-08-2-IC

*TOI:* 19.0 Personal Auto

*Sub-TOI:* 19.0001 Private Passenger Auto (PPA)

*Product Name:* AR-A-08-2-IC

*Project Name/Number:* Rule Revision/

## **Disposition**

Disposition Date: 12/11/2008

Effective Date (New): 06/01/2009

Effective Date (Renewal):

Status: Filed

Comment:

Rate data does NOT apply to filing.

SERFF Tracking Number: AMMA-125885370 State: Arkansas  
 Filing Company: Amica Mutual Insurance Company State Tracking Number: EFT \$25  
 Company Tracking Number: AR-A-08-2-IC  
 TOI: 19.0 Personal Auto Sub-TOI: 19.0001 Private Passenger Auto (PPA)  
 Product Name: AR-A-08-2-IC  
 Project Name/Number: Rule Revision/

<b>Item Type</b>	<b>Item Name</b>	<b>Item Status</b>	<b>Public Access</b>
<b>Supporting Document</b>	A-1 Private Passenger Auto Abstract	Filed	Yes
<b>Supporting Document</b>	APCS-Auto Premium Comparison Survey	Filed	Yes
<b>Supporting Document</b>	NAIC loss cost data entry document	Filed	Yes
<b>Supporting Document</b>	NAIC Loss Cost Filing Document for OTHER than Workers' Comp	Filed	Yes
<b>Supporting Document</b>	Uniform Transmittal Document-Property & Casualty	Filed	Yes
<b>Supporting Document</b>	Confidential	Filed	No
<b>Supporting Document</b>	Explanatory Memorandum	Filed	Yes

SERFF Tracking Number: AMMA-125885370 State: Arkansas  
Filing Company: Amica Mutual Insurance Company State Tracking Number: EFT \$25  
Company Tracking Number: AR-A-08-2-IC  
TOI: 19.0 Personal Auto Sub-TOI: 19.0001 Private Passenger Auto (PPA)  
Product Name: AR-A-08-2-IC  
Project Name/Number: Rule Revision/

## Objection Letter

Objection Letter Status Pending Industry Response

Objection Letter Date 12/04/2008

Submitted Date 12/04/2008

Respond By Date

Dear Brenda Walker,

This will acknowledge receipt of the captioned filing. Please verify that you will file factors and rate changes that correspond to the model when a rate filing is made.

Please feel free to contact me if you have questions.

Sincerely,

Alexa Grissom

## Response Letter

Response Letter Status Submitted to State

Response Letter Date 12/08/2008

Submitted Date 12/08/2008

Dear Alexa Grissom,

### Comments:

#### Response 1

Comments: Please be advised that this filing is for the custom insurance scoring model only. We are looking for the model to be approved and accepted for use when Amica is ready for implementation. When the rate and rule filing is submitted, we will include documentation demonstrating how the old and new rates differ.

There is no rate level impact associated with this filing & there are no pages attached to the Rate/Rule Schedule because it is our intention to file these documents when we submit a separate rate impact filing.

No Hit/Thin files will receive a neutral score of 1.000.

### Changed Items:

No Supporting Documents changed.

*SERFF Tracking Number:*      *AMMA-125885370*                      *State:*                      *Arkansas*  
*Filing Company:*              *Amica Mutual Insurance Company*              *State Tracking Number:*      *EFT \$25*  
*Company Tracking Number:*      *AR-A-08-2-IC*  
*TOI:*                      *19.0 Personal Auto*                      *Sub-TOI:*                      *19.0001 Private Passenger Auto (PPA)*  
*Product Name:*              *AR-A-08-2-IC*  
*Project Name/Number:*      *Rule Revision/*

No Form Schedule items changed.

No Rate/Rule Schedule items changed.

Sincerely,  
Brenda Miller, Brenda Walker, Carol Pedro, Christina Perfetti

*SERFF Tracking Number:* AMMA-125885370

*State:* Arkansas

*Filing Company:* Amica Mutual Insurance Company

*State Tracking Number:* EFT \$25

*Company Tracking Number:* AR-A-08-2-IC

*TOI:* 19.0 Personal Auto

*Sub-TOI:* 19.0001 Private Passenger Auto (PPA)

*Product Name:* AR-A-08-2-IC

*Project Name/Number:* Rule Revision/

## **Rate Information**

Rate data does NOT apply to filing.

SERFF Tracking Number: AMMA-125885370

State: Arkansas

Filing Company: Amica Mutual Insurance Company

State Tracking Number: EFT \$25

Company Tracking Number: AR-A-08-2-IC

TOI: 19.0 Personal Auto

Sub-TOI: 19.0001 Private Passenger Auto (PPA)

Product Name: AR-A-08-2-IC

Project Name/Number: Rule Revision/

## Supporting Document Schedules

<b>Bypassed -Name:</b>	A-1 Private Passenger Auto Abstract	<b>Review Status:</b> Filed	12/11/2008
<b>Bypass Reason:</b>	Not Applicable		
<b>Comments:</b>			
<b>Bypassed -Name:</b>	APCS-Auto Premium Comparison Survey	<b>Review Status:</b> Filed	12/11/2008
<b>Bypass Reason:</b>	Not Applicable		
<b>Comments:</b>			
<b>Bypassed -Name:</b>	NAIC loss cost data entry document	<b>Review Status:</b> Filed	12/11/2008
<b>Bypass Reason:</b>	Not Applicable		
<b>Comments:</b>			
<b>Bypassed -Name:</b>	NAIC Loss Cost Filing Document for OTHER than Workers' Comp	<b>Review Status:</b> Filed	12/11/2008
<b>Bypass Reason:</b>	Not Applicable		
<b>Comments:</b>			
<b>Satisfied -Name:</b>	Uniform Transmittal Document- Property & Casualty	<b>Review Status:</b> Filed	12/11/2008
<b>Comments:</b>			
<b>Attachment:</b>	PCtrans.pdf		
<b>Satisfied -Name:</b>	Explanatory Memorandum	<b>Review Status:</b> Filed	12/11/2008

*SERFF Tracking Number:* AMMA-125885370

*State:* Arkansas

*Filing Company:* Amica Mutual Insurance Company

*State Tracking Number:* EFT \$25

*Company Tracking Number:* AR-A-08-2-IC

*TOI:* 19.0 Personal Auto

*Sub-TOI:* 19.0001 Private Passenger Auto (PPA)

*Product Name:* AR-A-08-2-IC

*Project Name/Number:* Rule Revision/

**Comments:**

**Attachment:**

Amical NCOIL Filing Explanation.pdf

### Property & Casualty Transmittal Document

<b>1. Reserved for Insurance Dept. Use Only</b>	<b>2. Insurance Department Use only</b> a. Date the filing is received: b. Analyst: c. Disposition: d. Date of disposition of the filing: e. Effective date of filing: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">New Business</td> <td></td> </tr> <tr> <td>Renewal Business</td> <td></td> </tr> </table> f. State Filing #: g. SERFF Filing #: h. Subject Codes	New Business		Renewal Business	
New Business					
Renewal Business					

<b>3. Group Name</b>	<b>Group NAIC #</b>

4. Company Name(s)	Domicile	NAIC #	FEIN #	State #
Amica Mutual Insurance Company	RI	028-19976	05-0348344	

<b>5. Company Tracking Number</b>	AR-A-08-1-IC
-----------------------------------	--------------

**Contact Info of Filer(s) or Corporate Officer(s)** [include toll-free number]

6.	Name and address	Title	Telephone #s	FAX #	e-mail
	Brenda M. Walker P.O. Box 6008 Providence, RI 02940-6008	Sr. Rate Filing Specialist	1-800-652-6422 (ext. 24584)	1-401-334-6518	bwalker@amica.com
<b>7.</b>	Signature of authorized filer				
<b>8.</b>	Please print name of authorized filer		Brenda M. Walker		

**Filing information** (see General Instructions for descriptions of these fields)

<b>9. Type of Insurance (TOI)</b>	19.1/21.4 Private Passenger Auto
<b>10. Sub-Type of Insurance (Sub-TOI)</b>	19.1002/21.1000 PPA Liability and Phy Damage Combination
<b>11. State Specific Product code(s)(if applicable)[See State Specific Requirements]</b>	
<b>12. Company Program Title (Marketing title)</b>	Personal Automobile
<b>13. Filing Type</b>	<input type="checkbox"/> Rate/Loss Cost <input type="checkbox"/> Rules <input type="checkbox"/> Rates/Rules <input type="checkbox"/> Forms <input type="checkbox"/> Combination Rates/Rules/Forms <input type="checkbox"/> Withdrawal <input checked="" type="checkbox"/> Other (give description) <b>Filing Amica Credit Model (ACES)</b>
<b>14. Effective Date(s) Requested</b>	New: 06/01/09      Renewal: 06/01/09
<b>15. Reference Filing?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>16. Reference Organization (if applicable)</b>	N/A
<b>17. Reference Organization # &amp; Title</b>	N/A
<b>18. Company's Date of Filing</b>	November 6, 2008
<b>19. Status of filing in domicile</b>	<input checked="" type="checkbox"/> Not Filed <input type="checkbox"/> Pending <input type="checkbox"/> Authorized <input type="checkbox"/> Disapproved

## Property & Casualty Transmittal Document—

<b>20.</b>	<b>This filing transmittal is part of Company Tracking #</b>	AR-A-08-2-IC
------------	--	--------------

<b>21.</b>	<b>Filing Description</b> [This area can be used in lieu of a cover letter or filing memorandum and is free-form text]
------------	--

Your records will indicate that Amica's current rating plan uses credit scores as one of the rating variables. The records will further show that Amica uses the Preferred Auto3.0 07 02 credit score model to determine the credit scores.

We wish to file an Amica Credit Evaluation Systems (ACES) scoring model developed by Equifax, for our use effective June 1, 2009. Please note that we have filed the same model for Homeowners in SERFF Number AMMA-125885371 and Personal Umbrella in SERFF Number AMMA-125886048.

Enclosed is information which explains the new model that Amica will use to calculate the credit scores. Please do not hesitate to contact us should you require additional information about this new model.

<b>22.</b>	<b>Filing Fees</b> (Filer must provide check # and fee amount if applicable) [If a state requires you to show how you calculated your filing fees, place that calculation below]
------------	---

**Check #: EFT**  
**Amount: \$25.00**

**Refer to each state's checklist for additional state specific requirements or instructions on calculating fees.**

**\*\*\*Refer to the each state's checklist for additional state specific requirements (i.e. # of additional copies required, other state specific forms, etc.)**

## RATE/RULE FILING SCHEDULE

(This form must be provided ONLY when making a filing that includes rate-related items such as Rate; Rule; Rate & Rule; Reference; Loss Cost; Loss Cost & Rule or Rate, etc.)

**(Do not refer to the body of the filing for the component/exhibit listing, unless allowed by state.)**

<b>1.</b>	<b>This filing transmittal is part of Company Tracking #</b>	<b>AR-A-08-1-IC</b>
-----------	--	---------------------

<b>2.</b>	<b>This filing corresponds to form filing number</b> (Company tracking number of form filing, if applicable)	<b>N/A</b>
-----------	---	------------

Rate Increase     
  Rate Decrease     
  Rate Neutral (0%)

<b>3.</b>	<b>Filing Method (Prior Approval, File &amp; Use, Flex Band, etc.)</b>	File and Use
-----------	--	--------------

<b>4a.</b>	<b>Rate Change by Company (As Proposed)</b>
------------	---

Company Name	Overall % Indicated Change (when applicable)	Overall % Rate Impact	Written premium change for this program	# of policyholders affected for this program	Written premium for this program	Maximum % Change (where required)	Minimum % Change (where required)

<b>4b.</b>	<b>Rate Change by Company (As Accepted) For State Use Only</b>
------------	--

Company Name	Overall % Indicated Change (when applicable)	Overall % Rate Impact	Written premium change for this program	# of policyholders affected for this program	Written premium for this program	Maximum % Change	Minimum % Change

<b>5.</b>	<b>Overall Rate Information (Complete for Multiple Company Filings only)</b>
-----------	--

		COMPANY USE	STATE USE
<b>5a</b>	<b>Overall percentage rate indication (when applicable)</b>		
<b>5b</b>	<b>Overall percentage rate impact for this filing</b>		
<b>5c</b>	<b>Effect of Rate Filing – Written premium change for this program</b>		
<b>5d</b>	<b>Effect of Rate Filing – Number of policyholders affected</b>		

<b>6.</b>	<b>Overall percentage of last rate revision</b>	0.2%
-----------	---	------

<b>7.</b>	<b>Effective Date of last rate revision</b>	06/01/08
-----------	---	----------

<b>8.</b>	<b>Filing Method of Last filing (Prior Approval, File &amp; Use, Flex Band, etc.)</b>	File and Use
-----------	---	--------------

<b>9.</b>	<b>Rule # or Page # Submitted for Review</b>	<b>Replacement or withdrawn?</b>	<b>Previous state filing number, if required by state</b>
01		<input type="checkbox"/> New <input type="checkbox"/> Replacement <input type="checkbox"/> Withdrawn	
02		<input type="checkbox"/> New <input type="checkbox"/> Replacement <input type="checkbox"/> Withdrawn	
03		<input type="checkbox"/> New <input type="checkbox"/> Replacement <input type="checkbox"/> Withdrawn	

**Arkansas  
Amica Mutual Insurance Company  
Private Passenger Automobile**

**Explanatory Memorandum**

Your records will indicate that Amica currently uses credit information in rating. Effective June 1, 2009, we will replace the credit score model that is currently on file with an Amica specific model, Amica Credit Evaluation Systems (ACES). We are filing this model now so that it is available for our use when Amica is ready for implementation.

**Model Goals:**

We currently use Equifax Preferred Auto 3.0 in rating Private Passenger Automobile. While this generic model segments our business fairly well, we have little control over the reason codes that we send to our customers. Further, a model built on Amica-specific data should lead to increased segmentation.

**Model Algorithm**

We apply Poisson distribution to develop the risk model. The expression of the distribution is

$$f(y) = \frac{u^y e^{-u}}{y!}, y \geq 0$$

$$\text{var}(y) = u$$

The parameters were estimated by using Ridge-Stabilized Newton-Raphson algorithm to maximum the log-likelihood function with respect to the regression parameters  $(\beta_0, \beta_1, \dots, \beta_k)$  provided that there are k attributes are included in the model. Then predicted expected risk of the record  $i$  can be computed by

$$E(y_i) = e^{(\beta_0 + \beta_1 \times x_{i1} + \dots + \beta_k \times x_{ik})}$$

The predicted risk is then rescaled according to the attached calibration code

**Model Data**

The model was built by Equifax, with Amica-specific policy data. The (ACES) model was developed using policy data with effective dates between March 2003 and February 2006 evaluated as of May 31, 2007. Data was provided separately for auto and homeowners. All states were included in the data except Massachusetts and Vermont. Losses were capped at \$50,000 per claim on auto and \$50,000 per occurrence for Homeowners.

We used 70% of the data to build each model, and saved 30% of the data for validation. This data split was done randomly.

## **Methodology**

Frequency, using the Poisson distribution, and Severity, using the Gamma distribution, were modeled separately. A pure premium model was then derived by multiplying the frequency by severity.

Auto models were initially built on auto data and Homeowners models were initially built on homeowner's data. These models were then cross validated (auto on the home dataset and homeowners on the auto dataset) to determine if one model could be used on both lines of business.

We also tested the significance of attributes and transformed some attributes by investigating the following criteria: a) predictability, (b) correlation, (c) interpretability, (d) regulatory compliance and (e) consistent performance between difference policy years.

## **Model Results**

We found that the Homeowners frequency model performed well on both the auto and homeowners lines of business.

While including a severity component did lead to slightly more loss cost segmentation, without the ability to control for the severity drivers (coverage amount, deductible, etc.), we felt that adding this component would be problematic. Furthermore, a few of the components in the severity model were counterintuitive.

While using two different models (one for auto, another for homeowners) would also increase segmentation, we feel that this would cause some implementation issues. For example, with two separate models for auto and homeowners, we would be using different characteristics with different reason codes for auto and homeowners, which would potentially lead to conflicting messages.

Finally, the Homeowners model had fewer attributes and the included attributes are easy to understand and explain. As a result, we are proposing to implement this model built on Amica Homeowners data for Private Passenger Automobile.

**Exhibit 1** displays univariate results for each characteristic used in the model.

**Exhibit 2** displays the final model before scaling, including descriptions and attribute minimums and maximums where applicable.

**Exhibit 3** displays the scaling code used to convert the model from a predicted frequency to a numerical value. The scaled score has a range of 700 to 993.

**Exhibit 4** is a sample scoring calculation of a theoretical risk.

**Exhibit 5** contains loss and exposure data, and the methodology used in selecting the factors. (For auto, we mapped the current score to the modeled score and kept the same credit weights. The loss data based on the new model is excluded.)

We believe that this (ACES) model is an improvement over the current model, since it segments our book of business based on Amica-specific loss experience. Furthermore, we will now have the ability to be more specific and forthcoming as to how a policyholder may improve his or her score. Finally, with the concurrent changes in our rating procedures, we will now be able to significantly mitigate the year to year fluctuations in premium due to credit.