





Dean Jobko
NRG Energy
Chair, Insurance
Advisory Committee

The Insurance Advisory Committee has had an active year, particularly with its Emerging Risk and Cyber task forces. The following highlights new developments on emerging risks and cyber security prepared by task force members.

From the Emerging Risks Task Force: Self-driving Vehicles

According to the Insurance Institute for Highway Safety (IIHS), it is anticipated that there will be 3.5 million self-driving vehicles

by 2025 and 4.5 million by 2030. However, the Institute cautioned that these vehicles would not be fully autonomous, operating independently only under certain conditions. The pace of change may be constrained due to lagging infrastructure needed to support self-driving vehicles.

Self-driving vehicle technology as it currently exists in many vehicles, in and of itself, can dramatically reduce the frequency of crashes. The IIHS estimated that if all vehicles had forward collision and lane departure warning systems, side-view (blind spot) assist, and adaptive headlights, nearly a third of crashes and fatalities could be prevented. The deployment of semi-autonomous or fully-autonomous vehicles is expected to further reduce overall accident rates due to elimination of human error. With this shift, an evolution in insurance coverage will also occur, including a shift toward product liability exposure to the manufacturer or E&O exposure for the software programmer (e.g. programing errors that simultaneously affect many cars at once). Self-driving vehicles may also change the landscape if the comparatively few crashes that do still occur result in very serious injuries or fatalities due to vehicles operating at higher speeds.

Improved telematics are expected to simplify and expedite the adjustment process since the accident details will be recorded in the vehicle's "black box"; however, this will be complicated by the fact that, for an extended period, there will be of a mix of "traditional" vehicles, semi-autonomous vehicles and fully autonomous vehicles on the road at the same time. Allocation of liability will be more challenging in these types of incidents.

Impacts to Insurers

- Integration of driverless vehicles with human-controlled vehicles – potentially blurred risk/loss scenarios and responding risk transfer/insurance programs
- Decline of accidents reduces auto (commercial and personal lines) premium revenues – increase product liability premium revenues
- Who owns the risk: Risk transfer – Auto (commercial/personal) to product liability insurance or a blend of coverage
- Underwriting challenges: Assessment based on loss history/mileage/territory replaced by information supplied by the telematics devices installed in the vehicle. Where the vehicle is garaged may impact underwriting considerations based on the extent of infrastructure to support driverless technology



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- Claims handling: increased complexity
- Cyber risk to operators, the public, or manufacturing posed by potential or actual hacking of driverless car operating systems or manufacturers' servers – BI, PD, economic losses, loss of use, ransomware

There are a number of recent reports and articles that highlight the development of and emerging risks associated with self-driving vehicles:

Lloyd's Report

<https://www.lloyds.com/~media/lloyds/reports/emerging-risk-reports/autonomous-vehicles-final.pdf>

Rand Report

https://www.rand.org/content/dam/rand/pubs/research_reports/RR400/RR443-2/RAND_RR443-2.pdf

U.S. House unanimously approves sweeping self-driving car measure

<https://www.reuters.com/article/us-autos-selfdriving/u-s-house-unanimously-approves-sweeping-self-driving-car-measure-idUSKCN1BH2B2>

Editor

Jessica Shultz,
EQT Corp.



Utility-Scale Battery Energy Storage

As with all of the emerging technology-related risks that the EIM IAC discusses, it is important that we first achieve a fundamental understanding of the technology and its intended application before we delve into the current and future coverage issues.

In other words,

- What is battery energy storage and how does it work?
- What are some risks and concerns?
- How are EIM members currently using it and/or planning to use it?
- What is being done to mitigate the risks?
- How are current insurance policies treating this risk?

Fundamentally, current battery energy storage technology allows electric utilities to quickly install electric energy storage capacity that can store and access electrical energy in real time, without the need to ramp generation up or down to achieve the same load-resource balance. In addition, the modular design of current battery energy storage systems supports quickly increasing the capacity of storage sites.

Description of Battery Energy Storage Systems

Battery energy storage systems are comprised of a collection of large, rechargeable battery packs (collections of cells), a battery management system, a power conditioning system, a controller that interfaces with the fire detection and prevention system and the cooling system, and a transformer. In addition to the system

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package, there are also the components and systems required to interconnect them with the electric grid distribution system and/or a single generation site. Basically, a battery energy storage system contains battery cells that contain materials which are configured to allow for the exchange of ions during charging and discharging. The ions migrate from anode to cathode on discharge, generating a DC electrical current. This DC current is converted to AC and transformed to appropriate voltages to serve load.

According to the June 2016 Energy.gov paper, *Deployment of Grid-Scale Batteries in the United States*, "In 2015, the market for grid-scale batteries was four times larger than any prior year, lithium-ion batteries made up 95% of deployed capacity..."

Why lithium-ion batteries? Lithium-ion batteries are lighter, smaller, provide higher power densities that last longer, charge faster and present a relatively low environmental footprint.

Sounds perfect, but what are the downsides? Well, there is the issue of overheating and catching fire. Some of the causes



are external short circuit, internal short circuit (intra-battery pack), overcharging, overdischarging, external heating and self-heating.

Typically, an event begins with elevated cell temperatures which lead to the generation of more heat and gas. When the battery system cannot eliminate the heat faster than it is being generated, the system experiences what is called a thermal runaway. This leads to excessive gassing with some of the gas pressure escaping through designed vents, but again, if not fast enough, the cell or cells may rupture and/or explode (requires an ignition source). The contents of the battery cells are flammable so this event can lead to a fire.

For excellent information on causes of fires and some advances in standards and designs that have mitigated the risk, refer to the Exponent presentation titled, "Lithium-ion Battery Energy Storage System Fires," dated March 2, 2016 and the FM Global white paper titled, "Increased Use of Lithium-ion Batteries," Marcos and Vollweiler.

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How are Battery Energy Storage Systems (BESS) being used?

According to a recent AES PHC Vancouver 2017 presentation titled “Battery Storage Technology and Exposures,” BESS are being used as generation and T&D alternatives.

Examples:

- Generation alternatives – non-generation spinning reserves and rapid (real time) deployment capacity
- T&D alternatives – balancing needs: frequency and voltage controls and response
- Some electric utilities – beginning to deploy BESS in support of rooftop solar installations, micro-grid facilities and embedded in distribution networks

What is being done to mitigate the risks?

Electric utilities are participating with UL and NFPA to revise standards including UL9540, UL1642, UL1973, NFPA 70, NFPA

855 and NFPA 1 among others. These standards address everything from design of the components and systems to the installation, operation and maintenance of the systems. Utility engineers and project managers are also pushing the development of safer technology through contractual requirements of the providers.

In addition, FM Global has issued DS 5-33, an FM Property Loss Data Sheet for energy storage risk assessment.

How are current insurance policies addressing the risk exposure?

For now, insurers, particularly FM Global, seem comfortable that the applications of BESS technology falls within the current fire codes and practices and so does not present a risk that cannot be managed effectively. For example, the electric power industry already has batteries at its power plants and the current loss control assessments address those systems. As BESS systems become more popular as stand-alone systems and in support of renewables, the insurers may need to revisit the way that BESS systems are addressed in the traditional operational programs.

Editor

*Robert Green,
PSE&G*





From the Cyber Task Force

Cyber security breaches, attempts, new security vulnerabilities and warnings continue to blanket the news and make tracking and responding to threats and warnings a challenge. The links and commentary below are meant to provide some insight into the current state of things:

- Perhaps most pertinent and critical to the industry, Symantec, with others, have raised a warning flag about the Dragonfly

attack on energy infrastructure. The Symantec article is linked here and contains mitigation recommendations at the back of their report:

- o [Dragonfly: Western energy sector targeted by sophisticated attack group \(Symantec\)](#)
- Also highly significant is news of the massive privacy breach at Equifax, with a disclosure loss estimated at 50% or more of all of the consumer credit records they maintain:
 - o [Equifax Announces Cybersecurity Incident Involving Consumer Information \(Equifax\)](#)
- More along the lines of data breach statistics, Verizon has published their annual data breach report. The executive summary is available below:
 - o [Verizon 2017 Data Breach Investigations Report \(Verizon\)](#)
- Many successful cyberattacks are typically the result of some degree of 'social engineering', which usually involves unsuspecting parties opening unsolicited email attachments or clicking on email links. The following is a quick overview of how to avoid falling victim to this type of email:
 - o [How to spot a phishing email \(CNET\)](#)

On the phishing front, there is a growing practice among some organizations of stripping emails of links and attachments to avoid hacking exploits that could lead to breaches. As cloud computing increases, many organizations have developed policies for acceptable (and prohibited) use of services and data stored on the services.

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Data Breach Update

On September 7, 2017, credit reporting agency Equifax announced it had suffered an enormous breach of its computer systems, impacting as much as 143 million consumers' private, personally-identifiable information, including social security numbers, names and addresses. The breach was first discovered in July 2017, and reportedly took place over a period from mid-May through July of this year. See the link on page 6 for more information. Consumers are strongly encouraged to check with Equifax to determine if their personal information is at risk, and to receive credit monitoring services if needed. See the link above for more information, or visit Equifax.com.

The Identity Theft Resource Center reports 975 breaches involving 19.4 million records in the U.S. as of September 5, as compared with 2016's 1,093 breaches, involving a reported 36.6 million records. The following is an excerpt from the 2016 breach report summary:

The number of U.S. data breaches tracked in 2016 hit an all-time

record high of 1,093, according to a new report released today by the [Identity Theft Resource Center \(ITRC\)](#) and [CyberScout \(formerly IDT911\)](#). This represents a substantial hike of 40 percent over the near record high of 780 reported in 2015. This raises the

question: are there actually more breaches or is it because more states are making this information publicly available?

Leading Types of Data Breaches

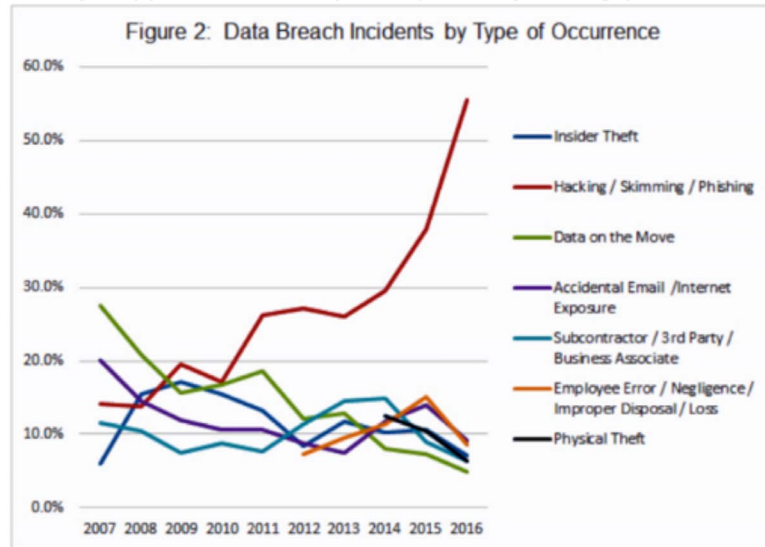
In 2007, the ITRC began adding categories to identify data breach incidents by the "type of occurrence" (see Fig. 2 next page). For the eighth consecutive year, hacking/skimming/phishing attacks were the leading cause of data breach incidents, accounting for 55.5 percent of the overall number of breaches, which is an increase of 17.7 percent over 2015 figures. Of these,

many were a result of CEO "spear-phishing" efforts (also known as business email compromise schemes) in which highly sensitive data, typically information required for state and federal tax filings, was exposed. As early as February, the IRS had already seen a 400 percent surge in this type of activity prompting both consumer and industry alerts addressing this issue.

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Cyber Exposures

One of the most challenging aspects of looking at cyber threats is understanding the myriad ways cyber exposures can impact a business. In this and subsequent quarterly updates, the cyber task force catalogs and begins to explore the broad implications, effects, and losses that can result from cybercrimes, and various solutions, preparations, and other mitigations to deal with the threats and impacts.

The task force recommends members review the foregoing inventory of potential cybercrime-related losses to ensure that they have identified their own responses, protections, and mitigations.

Potential losses due to cybercrime:

Breach (theft, exposure) of information, information systems (including cloud)

- 3rd-party liabilities (notification and monitoring costs, 3rd-party damages)
- 1st-party liabilities (loss of trade secrets/confidential information, remediation)
- Theft of 1st-party property (cash, other assets) resulting from information obtained

Damage to information, operational, cloud systems (destruction or manipulation of data or systems)

- Business systems-related business interruption impacts, revenue loss, extra expense
- Operational systems-related business interruption impacts, revenue loss, extra expense
- Contingent business interruption (e.g., loss of supplier/vendor)
- System and/or data recovery expense
- Ransom payments, other extortion-related costs
- 3rd-party liabilities – failure to supply, virus propagation, system used for malicious purposes
- Extended regulatory shutdown

Damage to property

- Extended regulatory shutdown
- Damage/loss/destruction of power systems (generation, transmission, distribution)
- Damage to ancillary systems including OT systems
- Sanctions for inability to meet market requirements (e.g., capacity performance)
- Extended regulatory shutdown and associated cybercrime costs (all exposures)

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Associated cybercrime costs (all exposures)

- Forensic/investigatory expense (including regulatory investigations)
- Regulatory fines, sanctions
- Legal defense
- Media liability, public relations expense
- Other reputation impacts

Cyber security represents an evolving and ever-expanding area of concern for utilities. As cyber thieves become more sophisticated, additional aspects of the generation, transmission and distribution chain are at risk, making the likelihood and magnitude of cyber intrusions even greater. System safeguards, vigilance and updated cyber response plans are essential to minimizing potential damage from cyber attacks.

Editors



*Michael McFarland,
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Swag Bags

The EIM team helped the Tampa Children's Cancer Center prepare race packets for its upcoming 6th Annual Stampede, a 5-K run and one-mile fun walk to support families of children who have cancer. The team packed 1,600 welcome packs and labeled over 3,000 runners' bibs.

NEW BOARD MEMBER, MARCUS BROWN



Marcus V. Brown
New Board Member

Marcus V. Brown, Executive Vice President and General Counsel of Entergy Corporation, is the newest member of the EIM Board. Entergy is an integrated energy company, based in New Orleans, that owns and operates regulated and merchant power plants with approximately 30,000 megawatts of generating capacity. The utility business of the New Orleans based company serves nearly three million customers in four states.

Marcus brings a broad range of experience to his new role as EIM Board Member, including leadership of the organization responsible for Entergy's legal and reputational risks, stakeholder engagement strategies and brand positioning. As a member of the Office of the Chief Executive, the company's most senior leadership team, and as General Counsel, Marcus provides counsel to the Board of Directors, the CEO and Entergy's Executive Management team. He is also responsible for all legal, ethics and compliance matters for Entergy Corporation and its subsidiaries—leading a team of attorneys responsible for handling major transactions, regulatory proceedings, nuclear matters, litigation, environmental and employment issues.

His additional responsibilities include the company's federal policy, regulatory and governmental affairs, as well as security (physical and cyber) and corporate communications departments. Environmental and corporate giving strategies, such as the

activities of the Entergy Charitable Foundation, also fall under his domain.

Reflecting on his career, Marcus considers his company's efforts to recover more than \$500 million in insurance proceeds after hurricanes Katrina, Rita and Ike to be one of his key litigation accomplishments. These efforts became critical to rebuilding the damaged electric and gas infrastructure of Entergy's utility system. Marcus also led the legal team in its successful challenge to several Vermont statutes impacting the future operations of the Vermont Yankee nuclear plant.

His other proud accomplishments include the Entergy Legal Department's numerous accolades. During his tenure, the department has been named Pro Bono Institute's 2016 Pro Bono Law Firm of the Year, Corporate Counsel Magazine's 2015 In-House Law Department of the Year finalist, and Minority Corporate Counsel Association's 2013 Employer of Choice.

Before joining Entergy in 1995, Marcus practiced with the Stone Pigman law firm, also based in New Orleans, after receiving a B.A. from Southern University. He also holds a Juris Doctorate from the Southern University Law Center, where he was a member of the Law Review, and an MBA from the Tulane University A.B. Freeman School of Business.

In addition to his new role as an EIM Board member, Marcus serves on the Board of Trustees for the Norman Francis Leadership Institute at Xavier University of New Orleans, and the Advisory Council for the Louisiana State University Laborde Energy Law Center. He is also a member of the Pro Bono Institute Board of Directors. Please join us in welcoming and supporting Marcus as he joins the EIM Board.



The EIM Board of Directors honored Gerry Hayes, recently retired partner of EIM's long-time, outside counsel, Baker & McKenzie. Gerry was recognized for more than 30 years of service to our company.

Citing the Resolution of Tribute presented at the Board dinner in August, EIM Chairman, Marian Durkin, reflected upon Gerry's international reputation as a leading expert on industrial insured captives and protected cell insurers. She also noted Gerry's unwavering commitment to EIM and other mutual insurers dedicated to the energy industry.

The Board resolution stated, "The Board of Directors expresses its most sincere appreciation and gratitude for all Gerry has contributed to EIM and EIS." It was presented along with an engraved, crystal brandy serving set.

EIM wishes Gerry, along with his wife Diane and their family, health, happiness and contentment during this new and exciting next phase of life.



CHELAN COUNTY
www.chelanpud.org

Public Utility District No. 1

www.chelanpud.org

Public Utility District No. 1 of Chelan County, Washington, generates and delivers electricity from three dams to more than 50,000 retail customers in the county, and to utilities serving customers across the Pacific Northwest. The PUD also provides water, sewer and wholesale telecommunications services. Created by the people's vote in 1936, Chelan PUD is devoted to achieving the 'ideals' of safety, stewardship, trustworthiness and operational excellence. In pursuit of these ideals, current strategic priorities include reinvesting in physical assets to sustain high levels of service, reducing debt to maintain low rates, and utilizing surplus revenues to enhance the county's quality of life.

CONGRATULATIONS TO SANDRA IMBRIANI AND BYRON WHITMAN ON THEIR NEW ROLES



Sandra Imbriani
Director-Casualty
Underwriting

Sandra Imbriani has assumed the role of Director-Casualty Underwriting at EIM. Her new responsibilities include oversight for EIM's excess casualty portfolio and broader responsibility in connection with EIM's reinsurance program, Insurance Advisory Committee (IAC) initiatives and Board of Director projects. Sandra continues to report to Jill Dominguez and looks forward to this new challenge, seeing it as yet another opportunity to meet the ever-changing needs of EIM Members, while learning and growing professionally.

Sandra began her career with EIM in 1994 as a Member Services Representative, after working with Poe & Brown (now Brown & Brown) and Liberty Mutual Insurance Company. Sandra particularly appreciates the 'mutual' concept, in which the owners are the Member Insureds. Please offer your support to Sandra as she undertakes her new and exciting role with EIM.



Byron Whitman
Controller

Byron Whitman will be taking on the role of Controller for EIM, making him responsible for tax and regulatory compliance, capital modeling, reinsurance and reserves analysis, and accounts payable. In addition, Byron will serve as liaison for EIM's annual audit process, while leading ad hoc projects such as EIM's document management system transition to ImageRight. He will also continue to drive the enterprise risk management process at EIM and assist in analysis of EIS and ECM accounts.

Byron has been working with EIM since he assumed the role of Accounting Manager in 2012. Before that, he worked for KPMG in public accounting, and at AAA Auto Club Group as an internal audit manager. He holds a Master's Degree in Accounting from the University of South Florida.

When Byron's not working, he enjoys running and spending quality time with his wife and two kids. Join us in congratulating Byron on his important new position with EIM.



Terence Harris
Claims Associate

Terence Harris joined the EIM team this past June as Claims Associate. Since then, he has been assisting the claims department with the administration and case management of property and liability claims.

Most recently, Terence worked in the subrogation department at a law firm, where he handled homeowner's claims. Before that, he graduated from Florida State University with a degree in International Affairs, hoping to become a foreign services officer.

Although he never landed a job on foreign soil, Terence frequently takes to the air and water. When he's not busy managing claims, he spends his free time as a general aviation pilot, avid kayak angler and certified scuba diver.

Terence is quickly making new friends at EIM, and looks forward to getting to know his coworkers better. He particularly welcomes those willing to share their knowledge of the utilities industry.

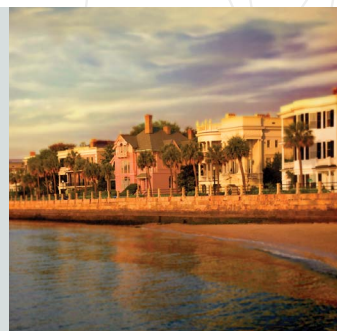


ENERGY INSURANCE SERVICES PROGRAM ADVISORY COMMITTEE CONFERENCE

October 23 – 26, 2017

LOCATION
*Charleston
South Carolina*

Join us at the Hyatt Place Hotel for PAC meetings with service providers and networking. In addition to meetings, we will also find time to enjoy unique Southern-style dinners and group activities.



THE 2018 ANNUAL EIM RISK MANAGERS INFORMATION MEETING

SAVE THE DATE

February 25-27, 2018

LOCATION

*Hyatt Regency
Grand Cypress, Orlando*

Balance Sheets

(Expressed in Thousands of U.S. Dollars)

	06/30/2017	12/31/2016
Assets		
Investments	\$ 1,519,843	\$ 1,515,197
Cash and cash equivalents	88,634	39,696
Reinsurance recoverables on losses	262,672	354,487
Prepaid reinsurance premiums	29,654	39,444
Premiums receivable	24,062	8,186
Income taxes recoverable	-	726
Other assets	(2,129)	1,361
Total assets	\$ 1,922,736	\$ 1,959,097
Liabilities and policyholders' surplus		
Reserves for losses and loss adjustment expenses	\$ 598,992	\$ 673,877
Unearned premiums	106,625	121,825
Reinsurance premiums payable and funds held	8,402	8,574
Net deferred tax liability	85,494	72,365
Policyholder distributions payable	-	25,000
Borrowings on line of credit	-	16,500
Accounts payable and accrued expenses	10,896	12,589
Income taxes payable	11,614	-
Total liabilities	822,023	930,730
Members' account balance	910,634	861,300
Accumulated other comprehensive income	190,079	167,067
Total policyholders' surplus	1,100,713	1,028,367
Total liabilities and policyholders' surplus	\$ 1,922,736	\$ 1,959,097

Statements of Income and Comprehensive Income

(Expressed in Thousands of U.S. Dollars)

	06/30/2017	06/30/2016
Underwriting revenue		
Net premiums earned	\$ 69,224	\$ 70,029
Other underwriting income	1,256	1,284
Total underwriting income	70,480	71,313
Underwriting expenses		
Net losses and loss adjustment expenses	29,813	60,594
Policy acquisition costs	1,001	1,244
Administrative expenses	5,635	5,752
Total underwriting expense	36,449	67,590
Income from underwriting	34,031	3,723
Investment income	36,483	30,886
Income before policyholder's distribution and income taxes	70,514	34,609
Policyholder distribution	-	-
Income before income taxes	70,514	34,609
Income tax expense	21,180	8,797
Net income	49,334	25,812
Other comprehensive income	23,012	13,269
Comprehensive income	\$ 72,346	\$ 39,081

EIM's Members Report is electronically published four times per year. Comments, questions, and suggested subjects from members are sincerely welcomed.

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