

THE ACADEMY

AMERICAN PUBLIC
POWER ASSOCIATION

Don't Wait Until You Need it! Are You Properly Insured?

Public Power Insurance Trends and Costs

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Discussion Outline

- Continued March of Natural Disasters
- Overall State of the Market
- Global Insurance Market Trends
- Power & Utility Industry Trends by Major Lines of Coverage
 - Includes APPA Insurance Survey Results
- Looking Forward

Global Insurance Trends

Continued Onslaught of Natural Disasters



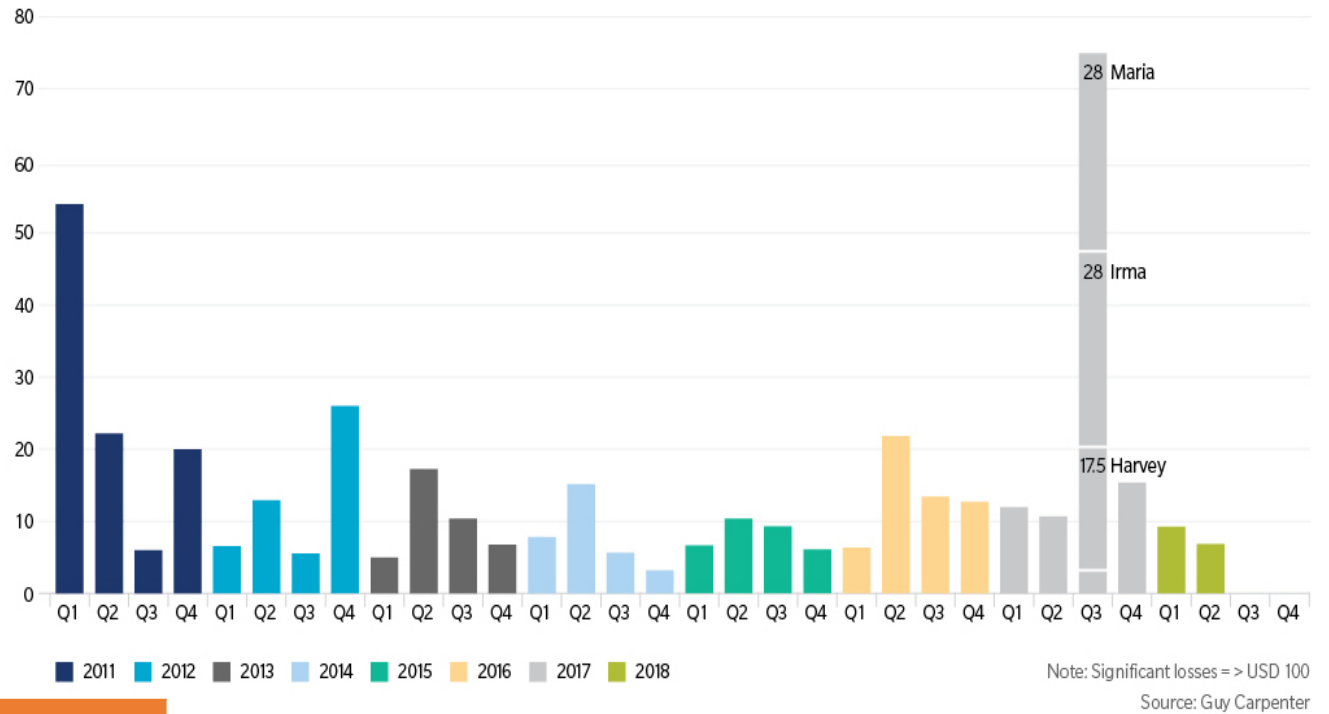
- 11 U.S. weather disaster events > \$1b billion in 2018
- Down from 2017
- 1980-2017 annual average of 6 events Source: NOAA
- Costliest back-to-back years for weather disasters on record
- Costliest year for California wildfires on record
- Clearly a challenging year for insurers, but manageable in view of the size and solvency of the industry today



2018 Insured Losses

- Fourth highest annual CAT loss year on record (and still developing)
- Experience continues to raise questions over pricing adequacy, underwriting strategy, and amount of capital available
- Wildfire remains an area of concern with capacity continuing to tighten

SIGNIFICANT INSURED LOSSES: 2011-2Q2018 IN USD BILLIONS



Event	Date	Country/Region	Losses (USD Million)	Insured Losses (USD Million)
1. Wildfire (Camp Fire)	November 8, 2018	United States	\$16,500	\$12,500*
2. Hurricane Michael	October 8, 2018	United States & Cuba	\$16,000	\$10,000*
3. Hurricane Florence	September 10, 2018	Hurricane Florence	\$14,000	\$5,000*
4. Typhoon Jebi	September 1, 2018	Japan & Taiwan	\$12,500	\$9,000
5. Flood/Landslide	July 5, 2018	Japan	\$9,500	\$2,400

2018 – Five Largest Natural Catastrophes

Source: Munich Re NatCatService, January 2019

*Figures include loss estimates from Property Claims Services (PCS)

State of the Insurance Market

[12 Month 2018 Data Not Yet Available from A.M. Best]

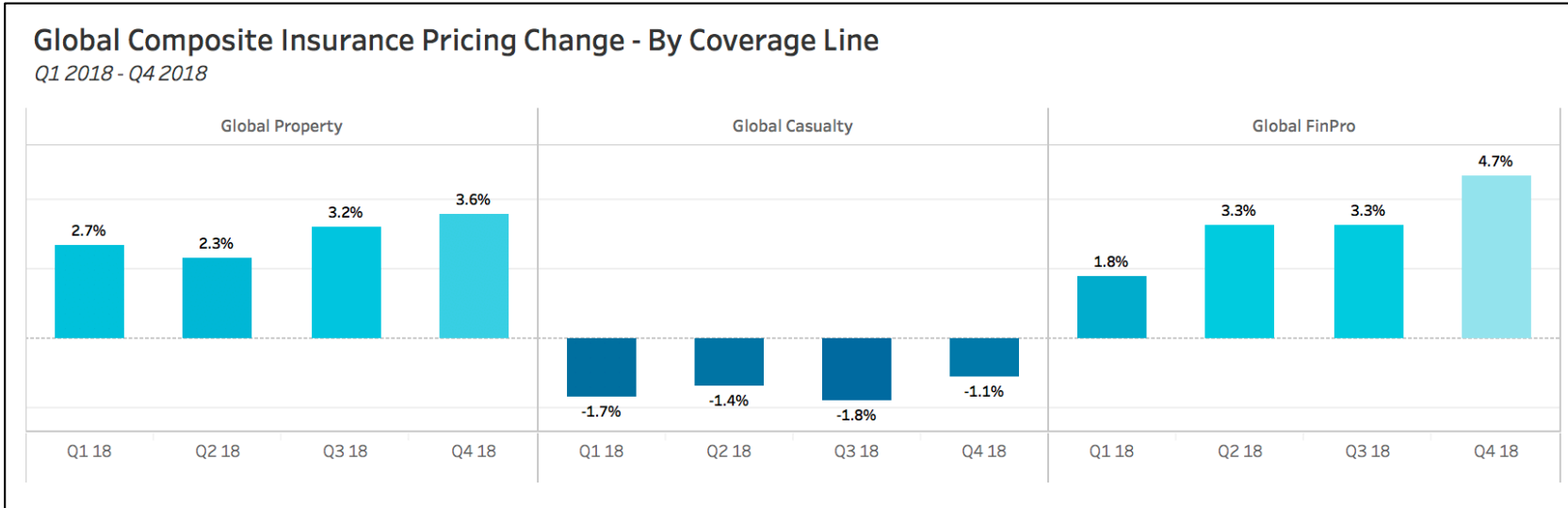
- US property and casualty industry posted strong results for first nine months of 2018
- Net underwriting income improved significantly as increases in written and earned premiums outpaced growth in incurred losses and expenses
- CAT losses returned to a more normalized level accounting for just 5.1 points of the combined ratio vs. 9.9 points in 2017
- Industry remains well capitalized with surplus continuing to grow

Nine Month Result US Property/Casualty Industry			
	2018	2017	% Change
Combined Ratio	97.6%	104.3%	-6.7%
Policyholder Surplus	\$743.9B	\$691.1B	+7.6%
Net Written Premiums	\$460.7B	\$413.8B	+11.3%
Investment Income	\$41.7B	\$35.5B	+17.3%

Source: A.M. Best; Insurance Information Institute

- Investment returns favorable through first three quarters however year-over-year gains were negatively impacted by market volatility in Q4.
- Conditions for 2019 mid year reinsurance renewals are uncertain as capital providers integrate recent experience into their market approach.
- Despite ample capacity, diminishing profitability makes it unclear what this might mean for broader market dynamics going forward

Global Outlook: Rate Increases on Property & Financial Products



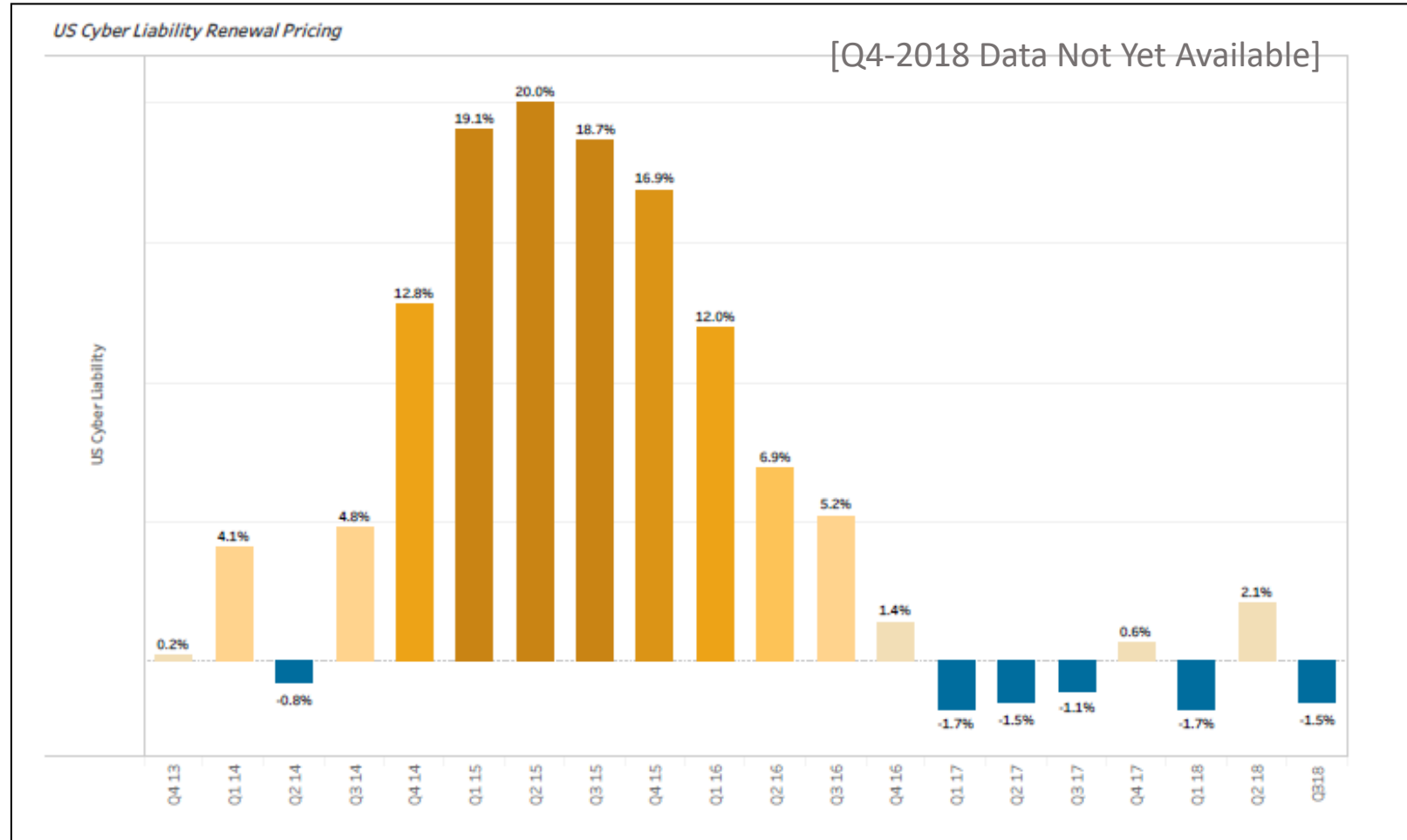
- Average casualty prices declined slightly over 1%, continuing a trend of year-over-year declines stretching back to 2013, however moderating from prior quarters
- Financial and professional lines pricing rose almost 5%, on average, largely due to increases in public company D&O, which has been impacted by recent litigation activity and less aggressive market competition

- Global property and financial & professional lines pricing increased, on average, in Q4-2018
- Pricing for property risks increased more than 3% on average, generally in line with prior four quarters
- CAT-exposed risks and large layered programs drove much of the increase in property pricing with 4% to 5% increases, on average

Source: Marsh Global Insurance Market Index Q4-2018, January 2019

Global Outlook: Cyber Pricing Decreases, Coverage Matures

- Average US pricing 15% Q3-2018
- US pricing small fluctuations last five quarters
- Cyber Insurance take-up rate continues to increase
- Business interruption has become a preminent cyber risk
- Scope of coverage continues to expand
- Competition among insurers continues
- Organizations no longer treat cyber as a problem to be fixed, but rather as a risk to be managed.



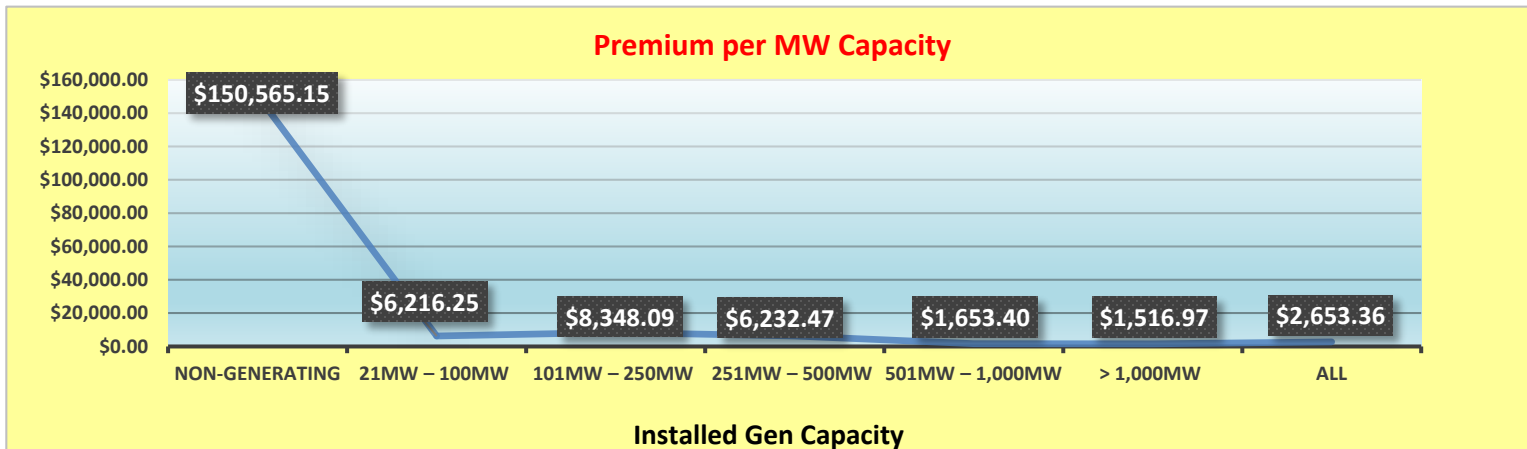
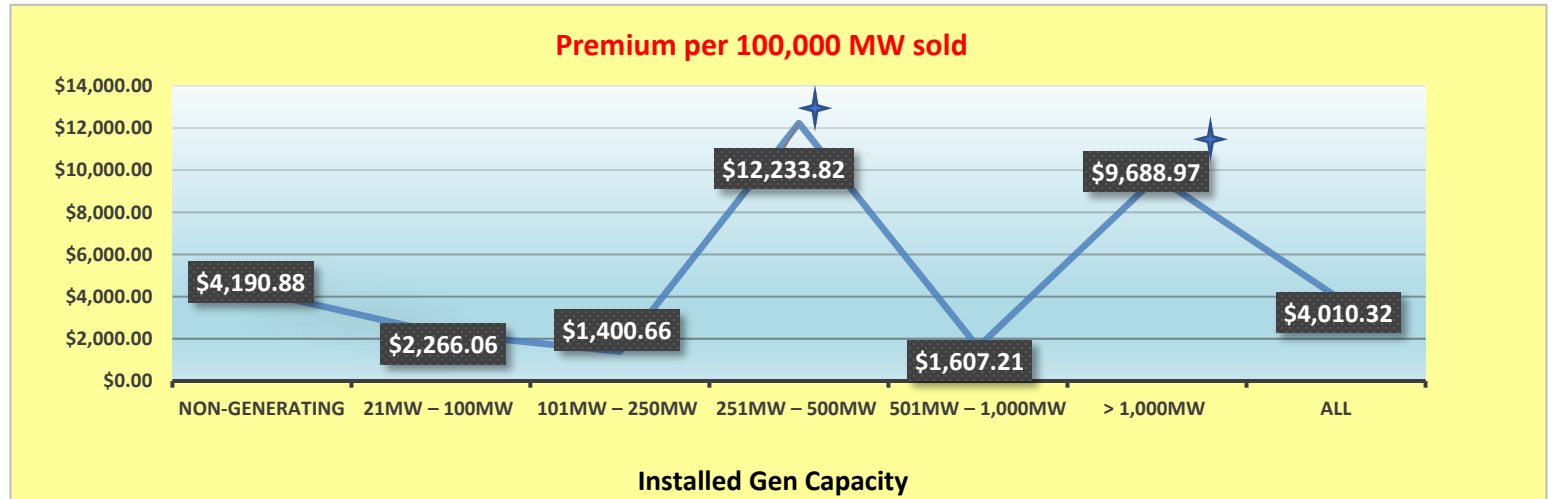
Source: Marsh Global Insurance Market Index Q3-2018, November 2018

Power & Utility Sector Trends/Rating Discussion

APPA INSURANCE SURVEY OVERVIEW

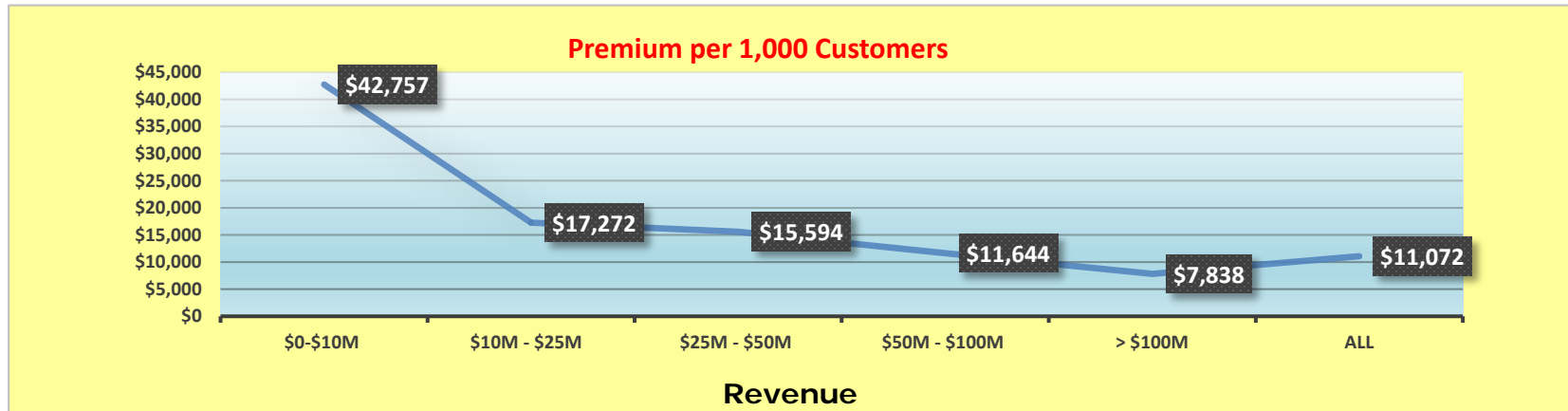
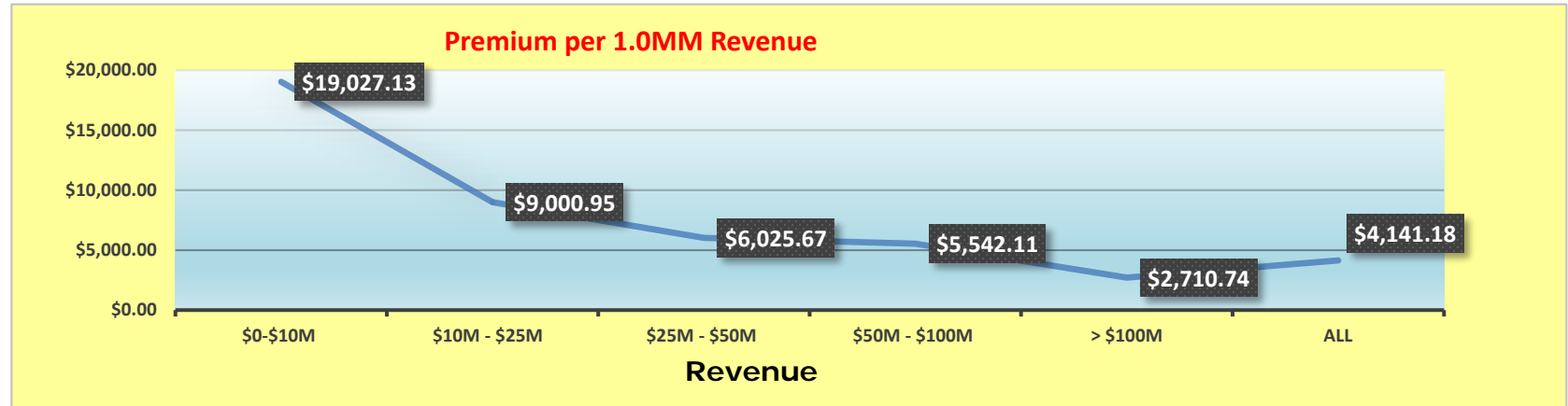
- SEGMENTATION
 - Respondents Are Divided Into Segments Defined By Installed Generation Capacity
 - Non-generators (Respondents With <20MW Installed) Are Further Segmented By Annual Revenue
 - Segments Are Indicated on The X (Horizontal) Axis
- OBSERVATIONS
 - Inconsistency Of Rates May Be An Indication Of Immature Insurance Market Due To Localized (As Opposed To National) Underwriting Efforts
 - Respondents Ranked Property Insurance, Workers Compensation, And Benefits As The Areas They Most Desire To Be Addressed By Hometown Connections Insurance Programs

Power & Utility P&C Insurance Cost (Generators)



★ Small Respondent Number

P&C INSURANCE COST NON-GENERATORS



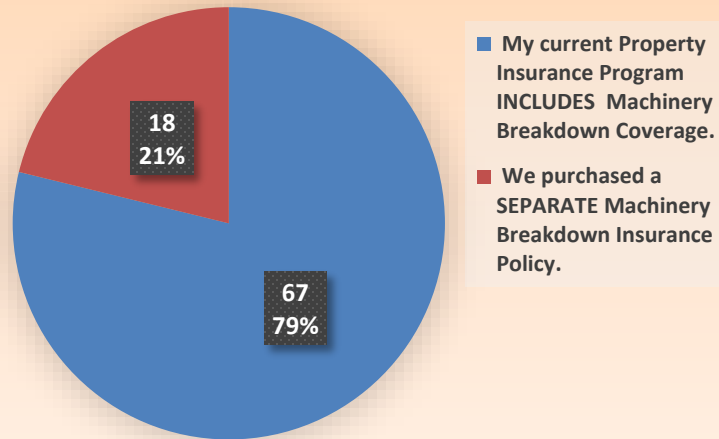
Power & Utilities Sector - Property

- 2018 Upward Rate trend <5%
- 1Q19 Upward trend 10%+ for loss free accounts
- Unfavorable loss experience accounts- rate increases relative to risk and loss profile
- NATCAT exposures drawing more underwriting scrutiny with a few instances of capacity reductions
- 2019 expect most markets to hold line and focus on price
- Some insurers unwilling to meet market prices and non-renewing driven by account force ranking, minimum return on capital requirements or an overdependence on modeling
- Multi-Year Deals are available, but less advantageous terms being offered
- Broad “resulting physical damage” cyber coverage in combination with embedded terrorism coverage has become the norm in “all risk” programs
- Robust loss control programs a prerequisite to obtaining most favorable terms

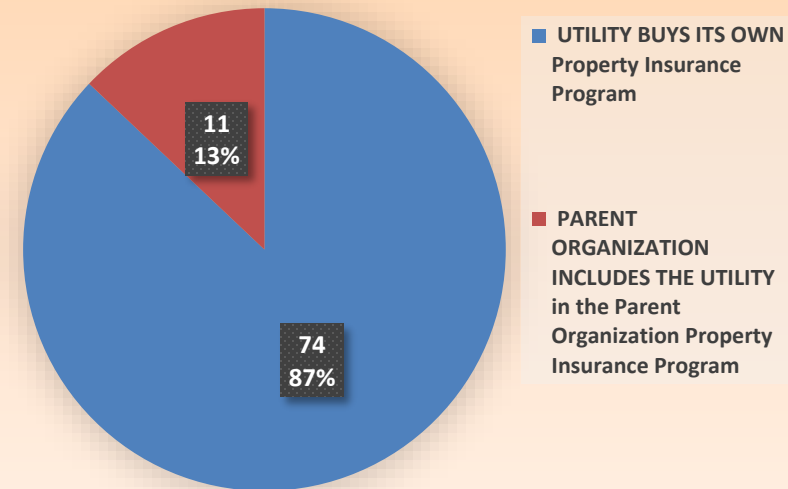


PROPERTY INSURANCE COVERAGE

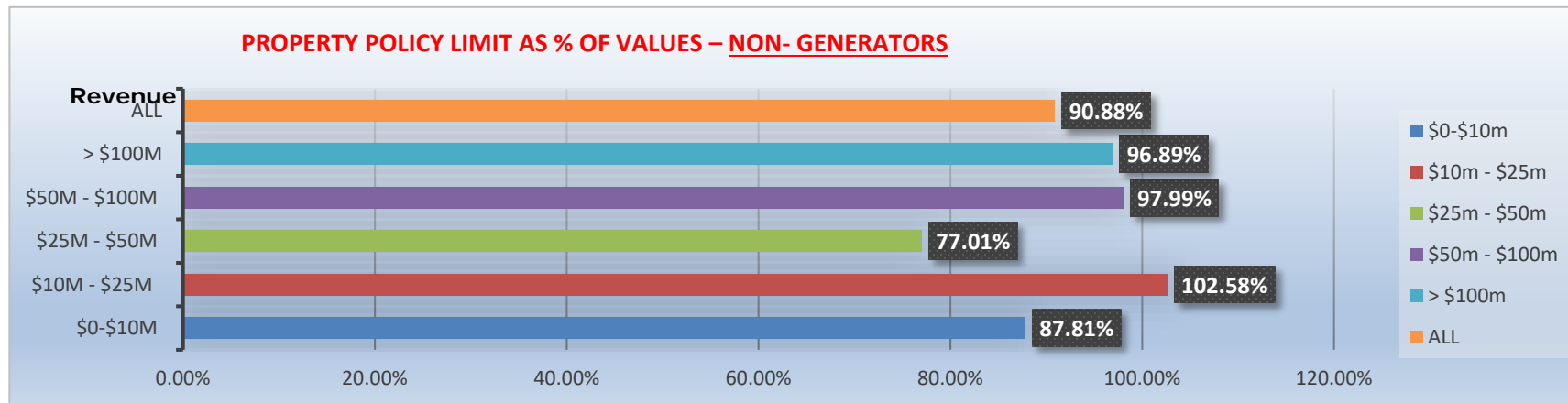
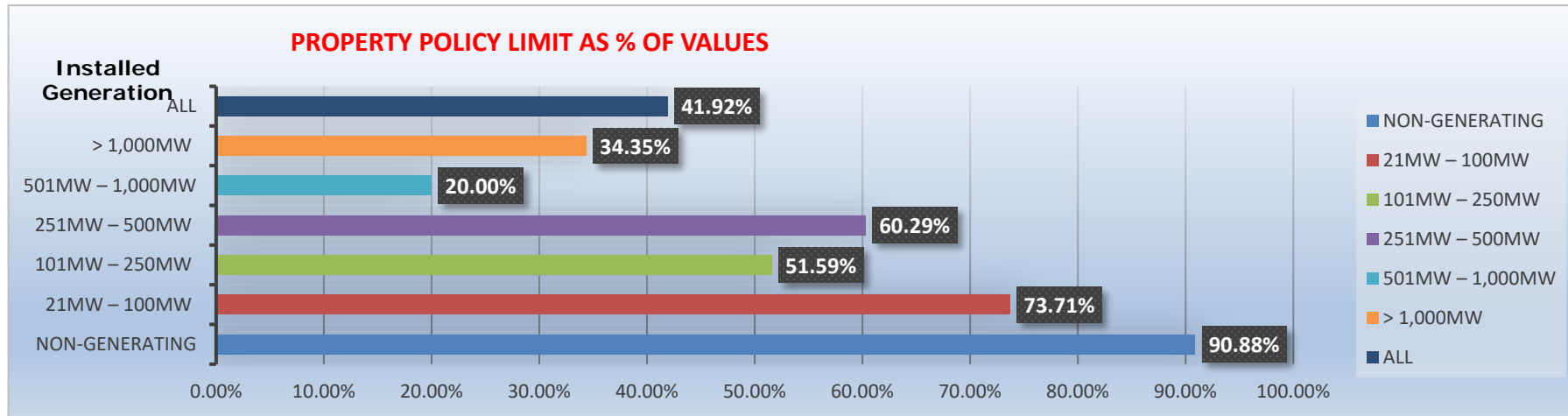
**DO YOU BUY SEPARATE MACHINERY
BREAKDOWN INSURANCE?**



WHO BUYS YOUR PROPERTY INSURANCE?



PROPERTY VALUES INSURED





Power & Utility Property Insurance Issues

Underwriter Concerns

- Turbine Technology
 - Bigger Fast Start Machines Failing Often
 - Gas Turbines Are Derived From Jet Airplane Engines
 - Insurers feel they are the Warranty for GE/Westinghouse
- Catastrophe Exposure
 - Coastal (Hurricane) Location
 - Flood Prone (Zone A) Areas
 - Cal or New Madrid Earthquake
- Aging Infrastructure
 - Transformer & Turbines - new technology s
 - Actual Cash Value Coverage pressure
 - Pays claim at depreciated value
- T & D
 - Today No Market For This (Adverse Selection)
 - Marsh Reviewing Financial Alternatives To Offer Attractive Financing Opportunities



Items Important to Underwriters

- Fire Protection
 - Sprinklers Above where Oil can escape (Bearings, Oil Storage, Boiler Burners)
 - Transformers separated to prevent Fire Spread
- Transformer Failures
 - Transformer Oil Gas Analysis (TOGA) Performed Regularly
 - Oil analysis predicts failures
- Preventative Maintenance
 - Turbine Overhaul Schedule
 - Preventative/Predictive Maintenance Plan Being Utilized

Property Insurance Rating/Coverage Items

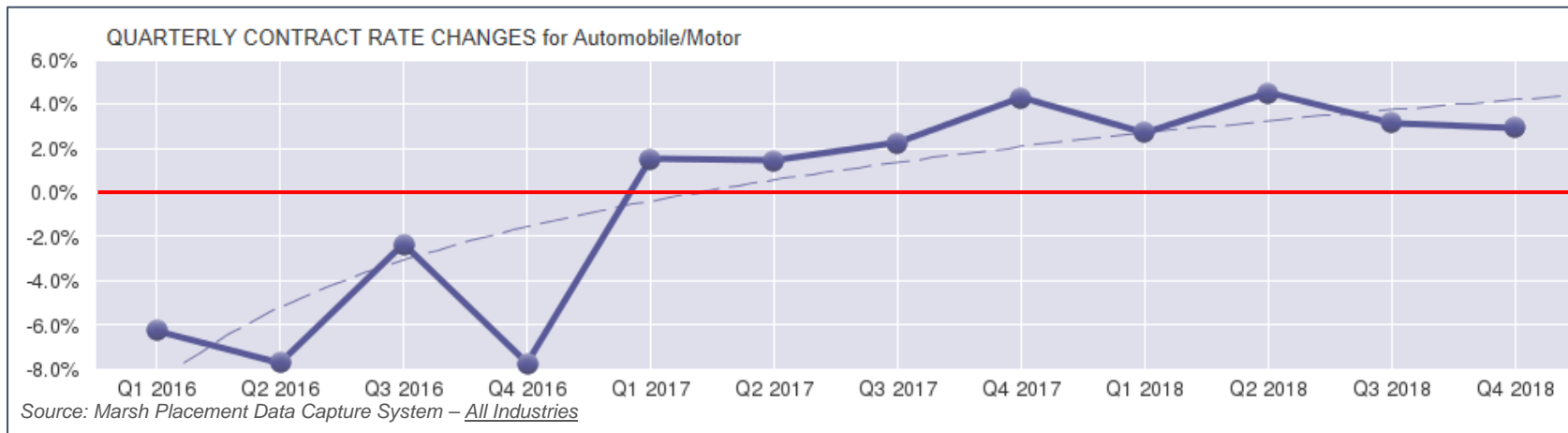
Pricing/Rating Methodology

- Rated based on Values Reported (Total Insured Values)
 - Cents per \$100 Insured
 - Rates from \$0.05 for Large Coal Plants to \$0.45 for smaller Wind Prone or Poorly Run Facilities
- Deductibles
 - Utility \$25k to \$100k
 - Power Gen
 - \$100k for Non-Generating Locations
 - Turbines \$250k to \$1m depending on Size & Model
- Loss of Profits
 - Available but not Generally Purchased by Regulated Utilities
 - Rate Case Recovery

Coverage Overview

- Coverage for Physical Damage to owned/controlled physical assets
- All Risk Except
 - Enforcement of Ordinance/Law or Government Action
 - Nuclear Related or War or Terrorism
 - Dishonest Acts or Intentional Damage by Insured
 - Mysterious Disappearance or Voluntary Parting
 - Loss of Market
 - Wear & Tear/Mold Fungi etc.
- Items to Review
 - Pollution Limit
 - Cover Physical Damage to Autos (May Save Auto premium)
 - Include Construction Coverage (Course of Construction)
 - Terrorism Endorsement
 - Limited T & D Line Coverage (1000' from Location)
 - Coverage for Professional Claim Preparation Help
 - Replacement Cost or Actual Cash Value (Depreciated Cost)

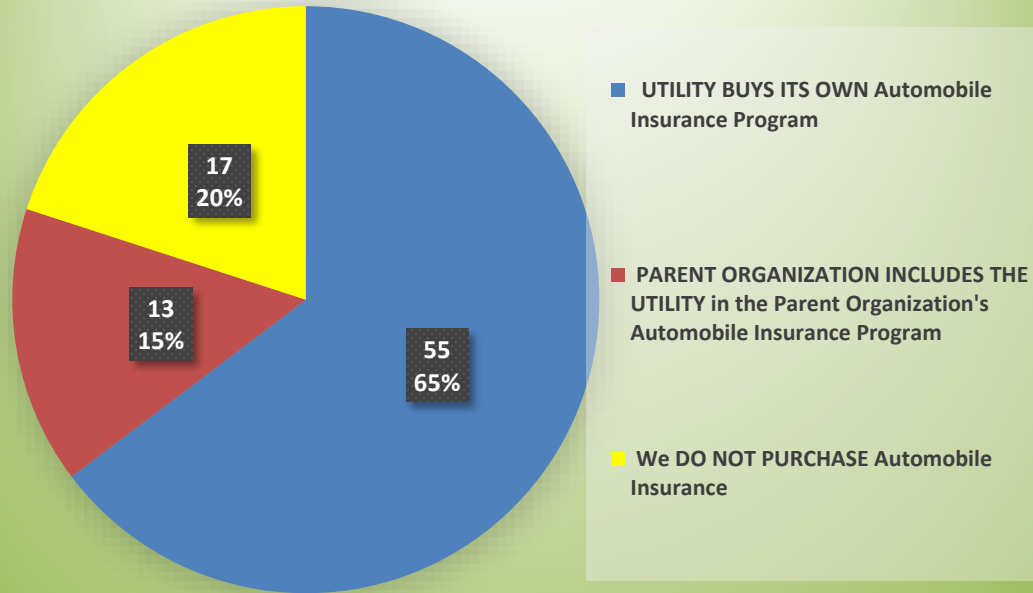
Power & Utilities Sector Automobile Liability



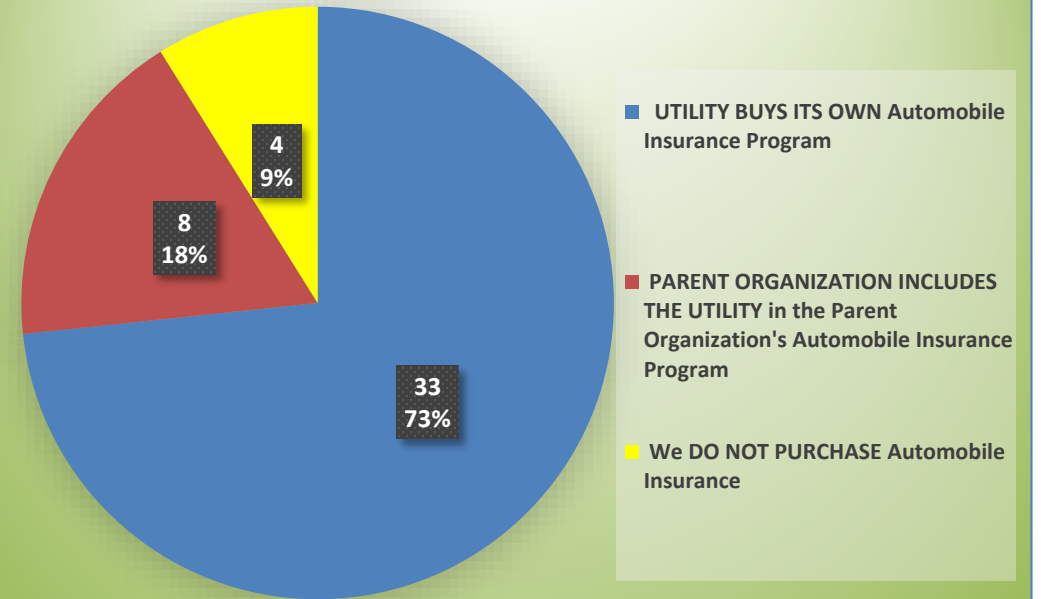
- Auto liability remains the most challenging primary casualty line
 - High frequency and severity of auto losses causing deterioration of results
- Reduced competition for buyers with adverse loss experience or large fleet exposures
- All major markets are seeking rate increases across their auto liability books
- Insurers are closely scrutinizing sharing economy risks
 - Should a claim be covered by commercial auto or personal auto policy?
- Emerging issue is how to address autonomous vehicle claims

AUTOMOBILE INSURANCE PURCHASING

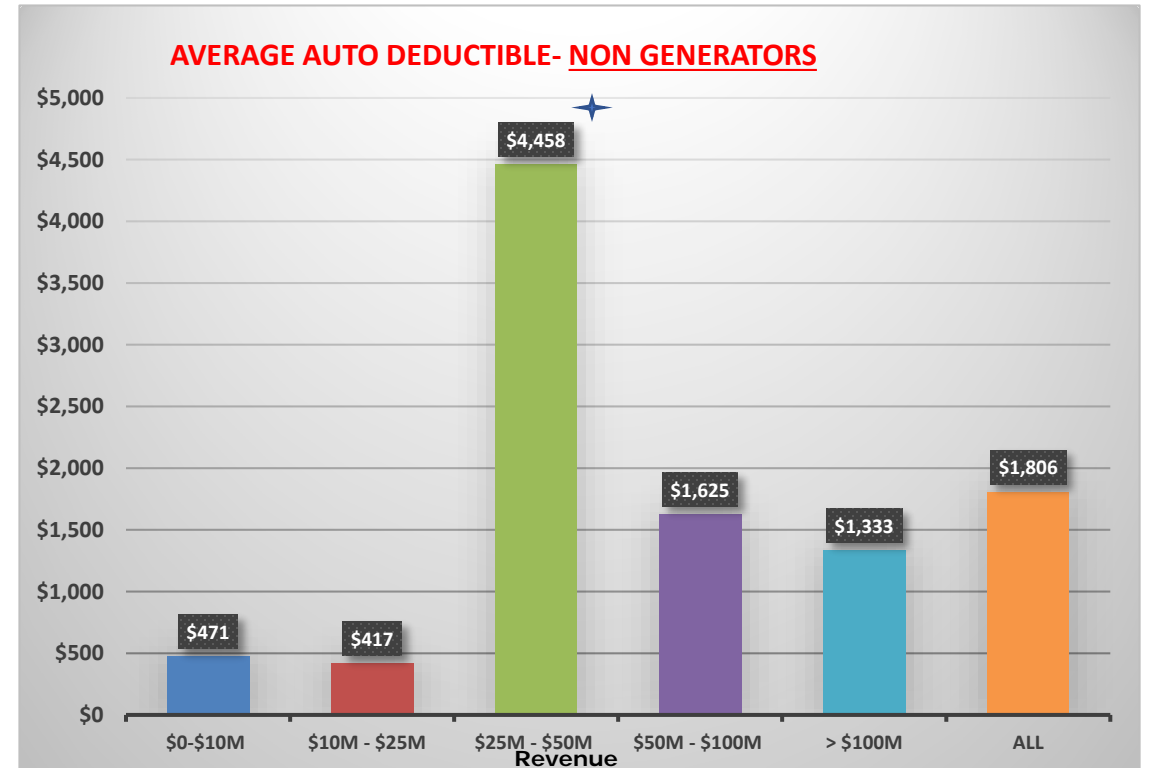
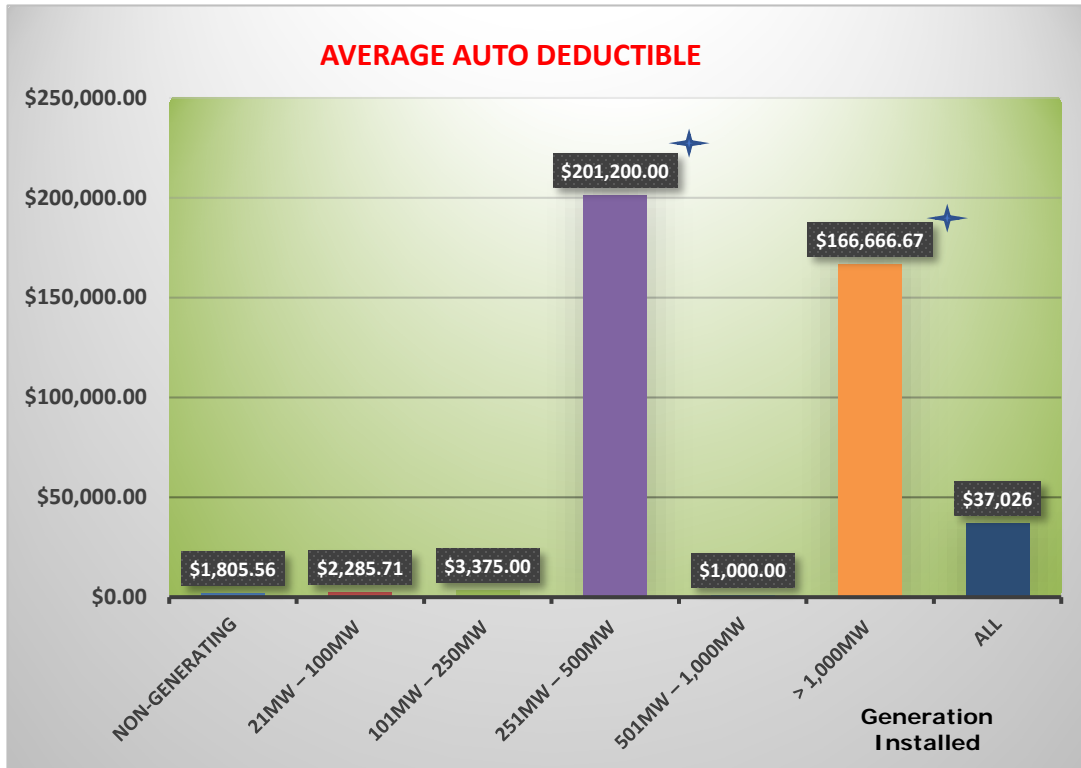
WHO BUYS THE AUTOMOBILE INSURANCE?



WHO BUYS NON-GENERATORS AUTOMOBILE INSURANCE



AUTO RATES & DEDUCTIBLES



Auto Insurance Rating/Coverage Items

Pricing/Rating Methodology

- Premium Based on
 - # of Vehicles
 - Type of Vehicles (Passenger Cars, Bucket Trucks, etc.)
 - Vehicle Use
 - Distance Driven Regularly
 - Parking Zip Code (big cities locations cost more than rural)
- Includes
 - 3rd Party Liability
 - Physical Damage
 - Medical Coverage
 - Under Insured Motorist
- Deductibles
 - Liability Usually \$0
 - Physical Damage - \$500 - \$10,000

Coverage Overview

- Coverage for
 - 3rd Party Liability
 - Physical Damage to Owned Vehicles
 - Medical Coverage
 - Underinsured or Uninsured Motorist
- Items to Review
 - Pollution - if transporting Fuel or oil - add endorsement to cover spills
 - Non-Owned Vehicles Coverage
 - Rental Cars - no need to buy coverage at counter Don't need
 - Personal Cars used on Company Business
 - Check Driving Records - Enforce Discipline Policy

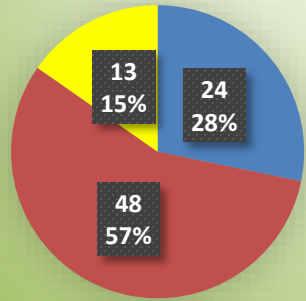
Power & Utilities Excess Liability (Umbrella)



- Industry Mutual Insurers Dominate
 - AEGIS Looking For Increases
 - EIM Signaling Stable Rates
- AEGIS And EIM Both Have Additional Capacity,
- Clients With Loss Activity And/Or Any Wildfire Exposures (Especially In California) Face Increased Pricing And Capacity Pressures
 - Recommend Early Start To 2019 Renewals

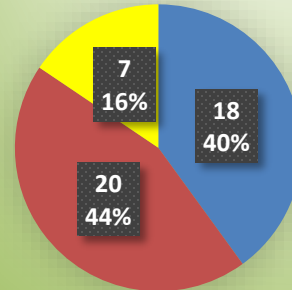
UMBRELLA/ EXCESS LIABILITY INSURANCE AND TORT IMMUNITY

DO YOU RELY ON TORT IMMUNITY AND NOT BUY UMBRELLA/EXCESS LIABILITY INSURANCE?



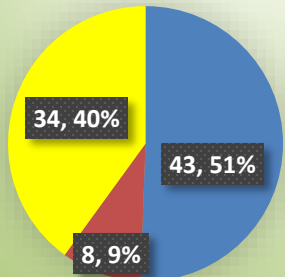
- DO NOT purchase UMBRELLA (XS LIABILITY) Insurance
- DO PURCHASE UMBRELLA (XS LIABILITY) Insurance
- No Answer on Umb-XS Purchase

NON-GENERATORS WHO RELY ON TORT IMMUNITY AND DO NOT BUY UMBRELLA/EXCESS LIABILITY INSURANCE



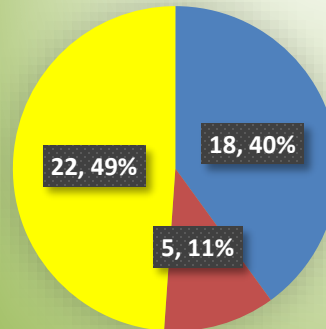
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WHO BUYS YOUR UMBRELLA/EXCESS LIABILITY INSURANCE?



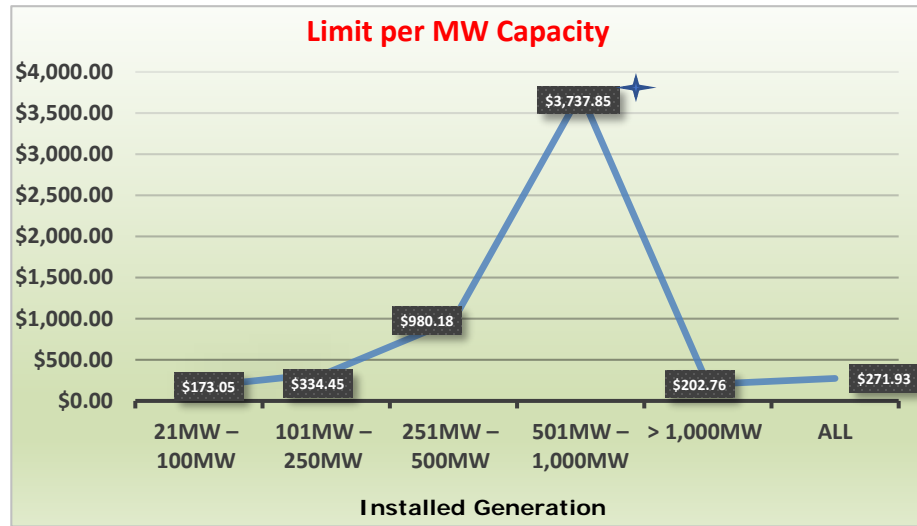
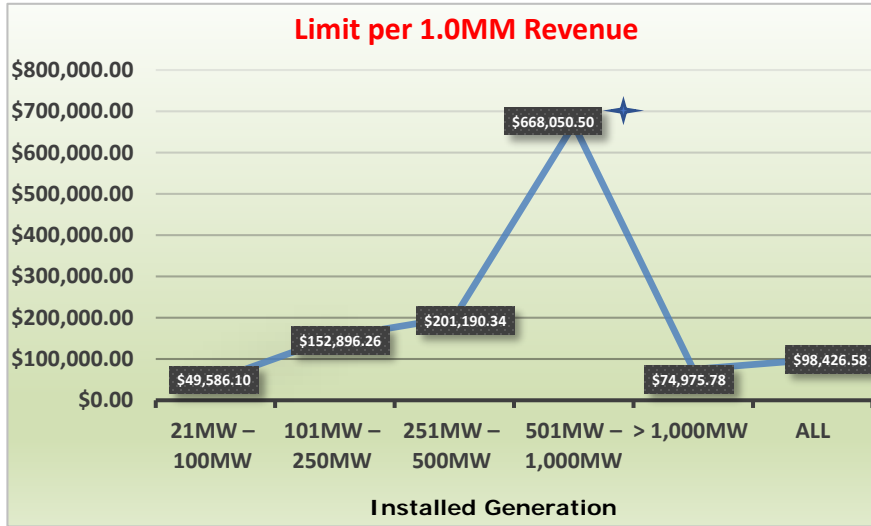
- UTILITY BUYS ITS OWN Umbrella (XS Liability) Insurance Program
- PARENT ORGANIZATION INCLUDES THE UTILITY in the Parent Organization's Umbrella (XS Liability) Insurance Program
- No answer

WHO BUYS NON-GENERATORS UMBRELLA/EXCESS LIABILITY INSURANCE?

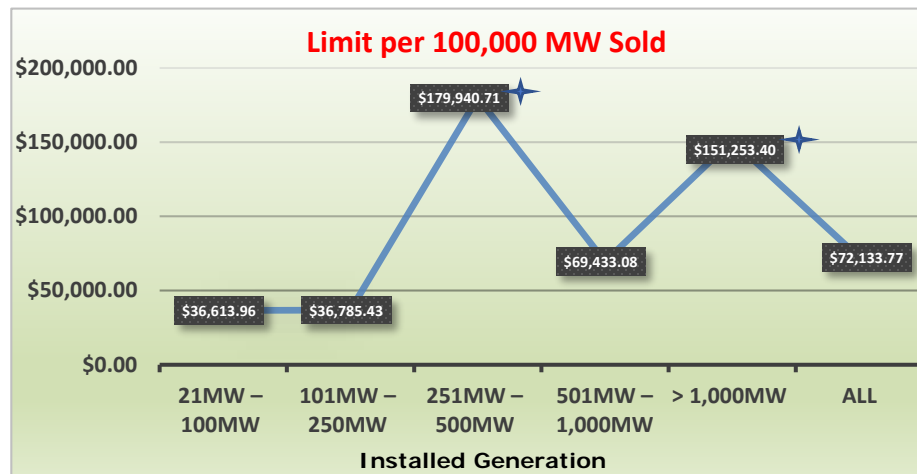
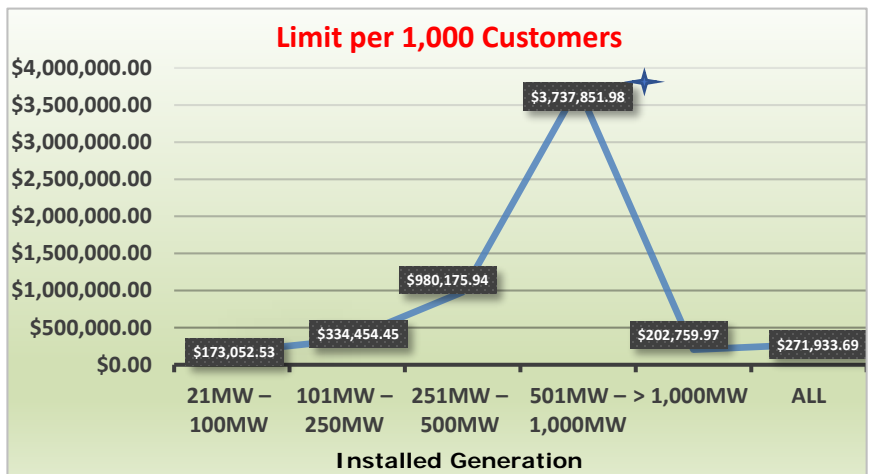


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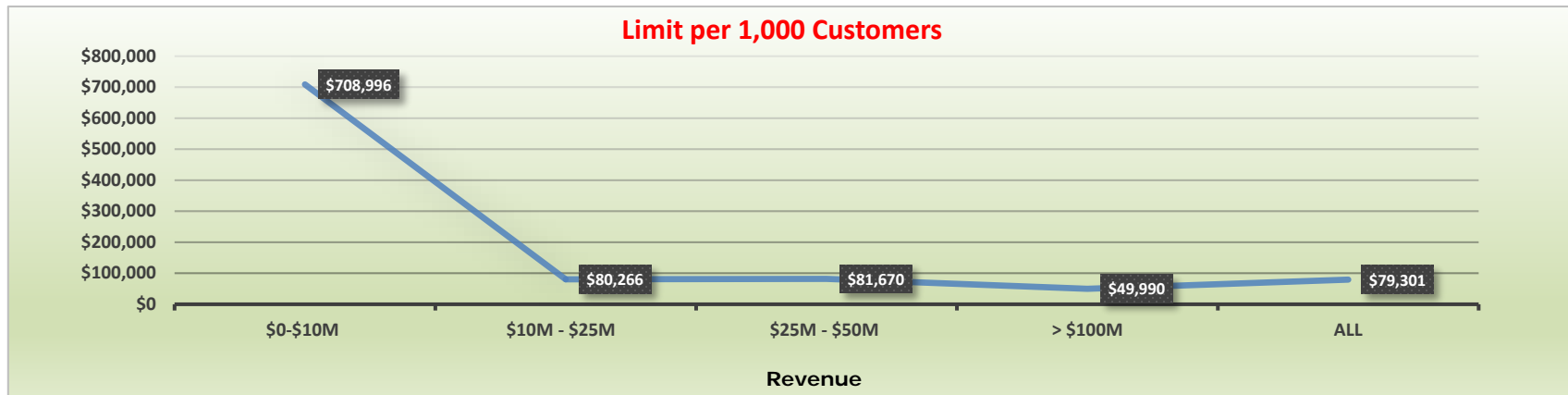
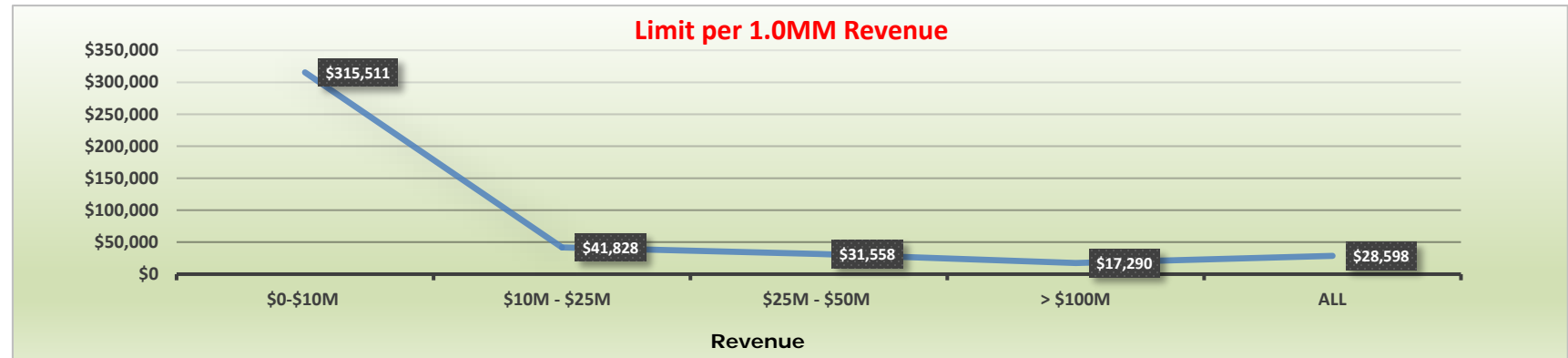
UMBRELLA/EXCESS LIABILITY LIMITS



★ Small Respondent Number



UMBRELLA/ XS LIABILITY LIMITS - NON GENERATORS



Excess Liability (Umbrella) Rating

Pricing/Rating Methodology

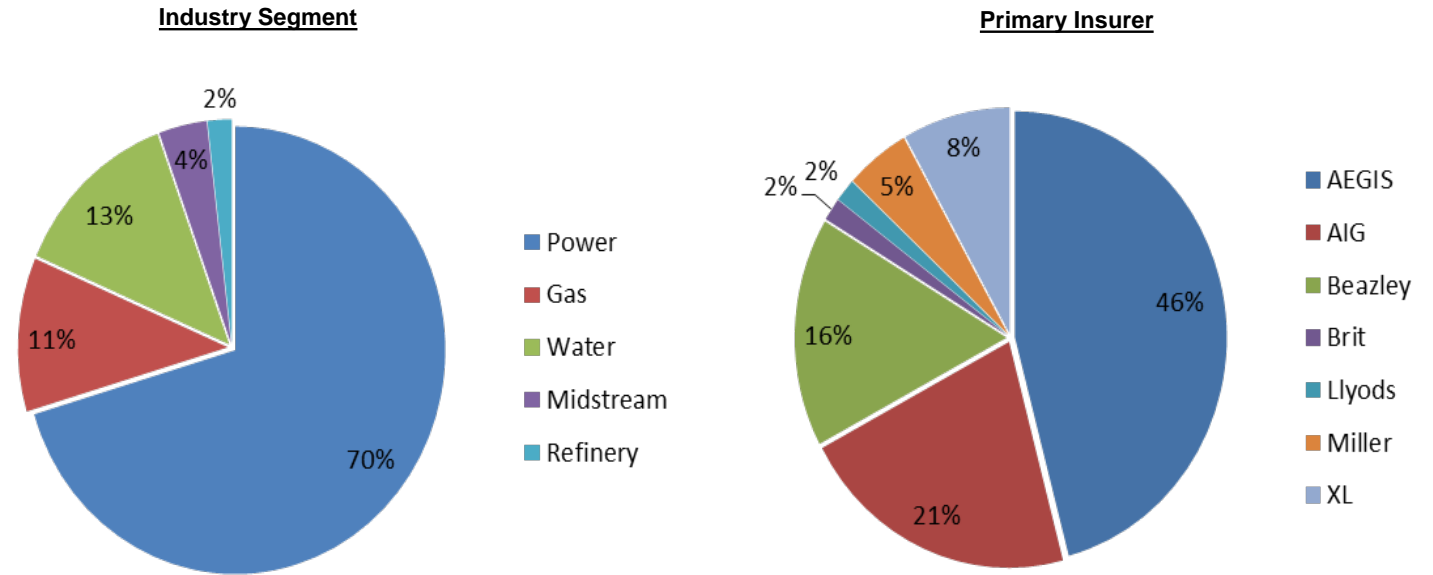
- Rated based on
 - Revenues
 - Number of Customers
 - MW's Sold
- Retention
 - Sits above GL, Auto Liability, Employers Liability (Work Comp) Limits
 - \$1m usual Retention
 - Some Exceptions of \$500k

Coverage Overview

- Coverage for 3rd Party Claims that Exceed the Primary Coverage Limits
 - Auto Liability, Employers Liability (Work Comp), General Liability
- Items to Review
 - Underlying Policies Scheduled?
 - "Follow Form" of Underlying Policies?
 - Pollution Incident Response?
 - Limit Appear Adequate?
- Savings Available at \$1m Retention
 - Raise underlying Limits to \$1m

CYBER POWER & UTILITIES GLOBAL PERSPECTIVE

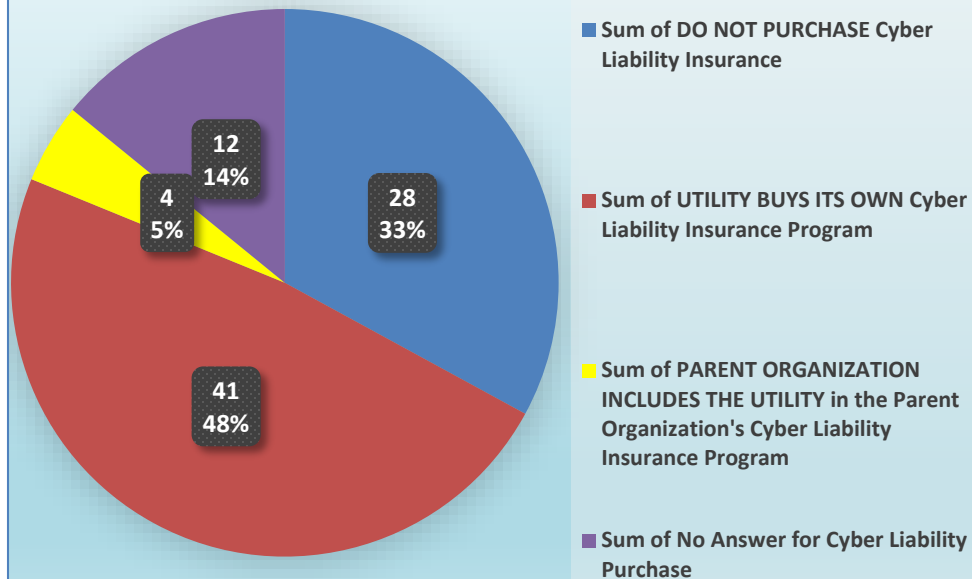
- Ample market capacity at currently \$1.8B up from <\$1B in 2014
- Uptake rates continue to increase within industry sector
- Some renewal price volatility as product evolves
- AEGIS remains leading primary insurer for industry sector
- Coverage differences exist amongst cyber forms with coverage terms continuing to be refined and broadened
- Uptake rate for Cyber BI coverage continues for all industry subsectors
- Utilization of NEIL capacity by members continuing with members seeing enhanced value in offering



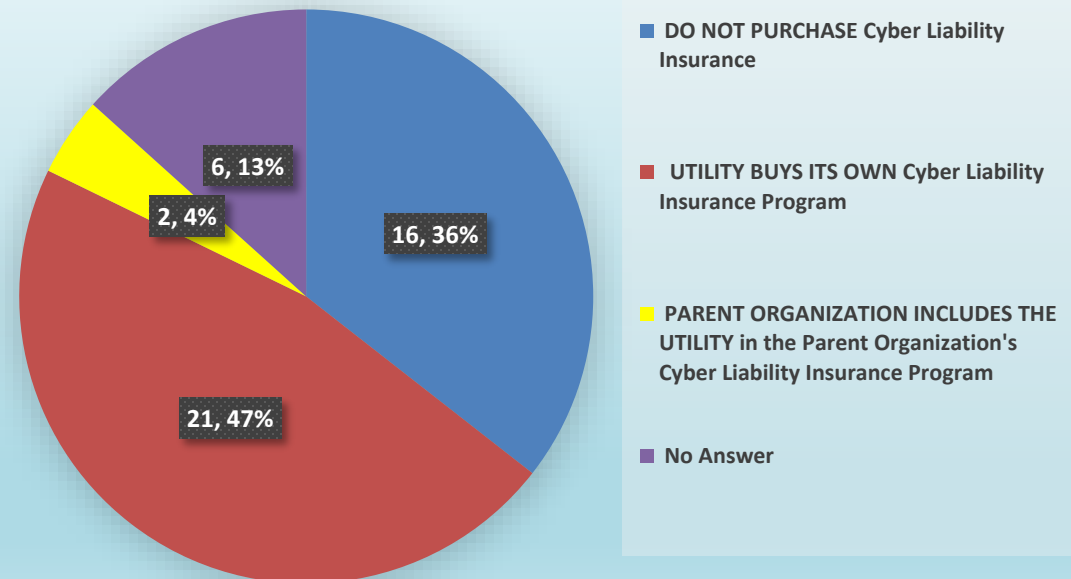
Source: Marsh FINPRO client data including 70 Energy, Power & Utilities sector cyber clients

APPA MEMBER CYBER LIABILITY INSURANCE

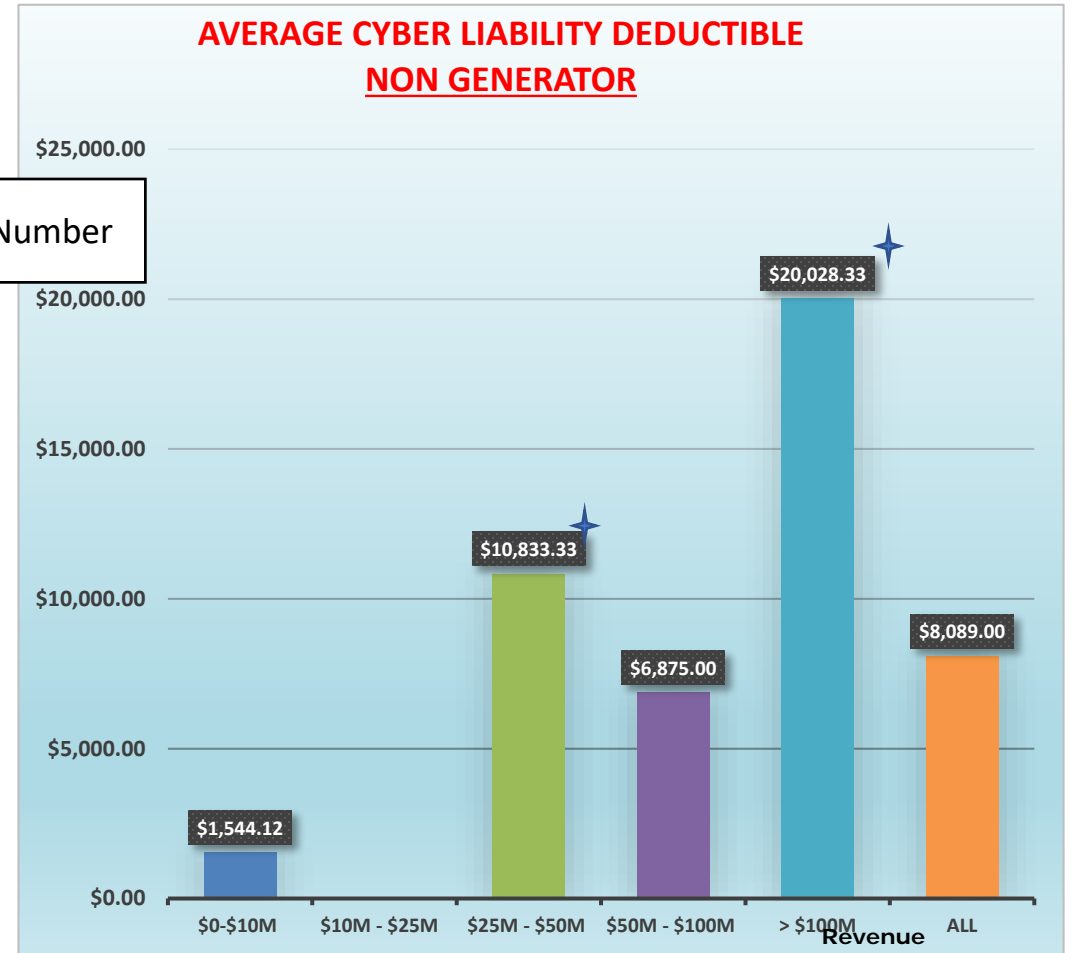
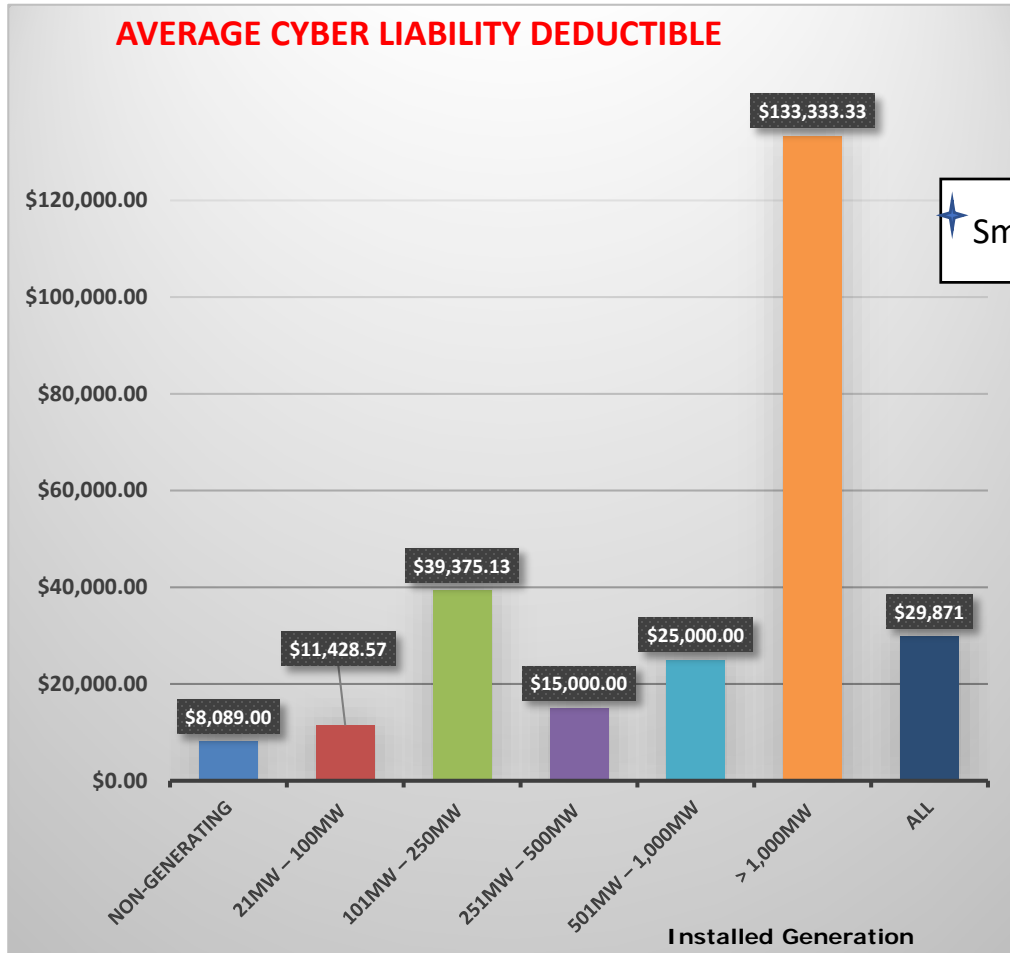
**WHO PURCHASE'S YOUR
CYBER LIABILITY?**



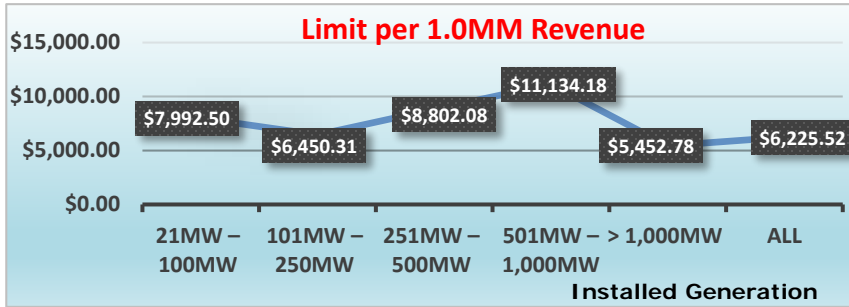
**NON-GENERATORS – WHO PURCHASES YOUR
CYBER LIABILITY?**



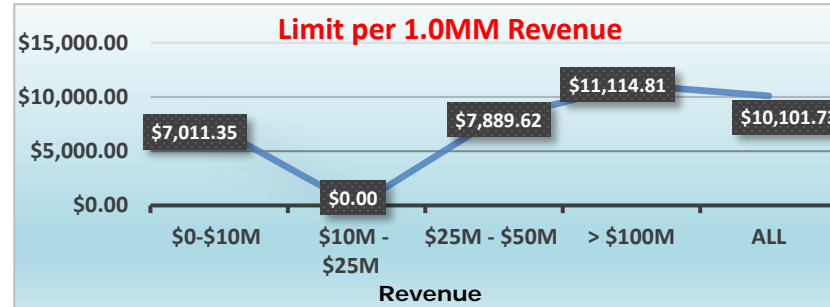
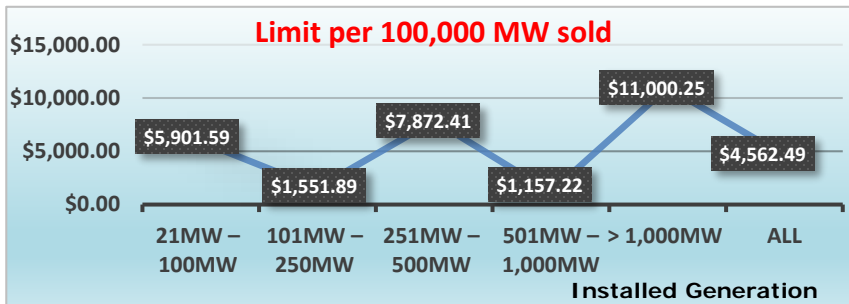
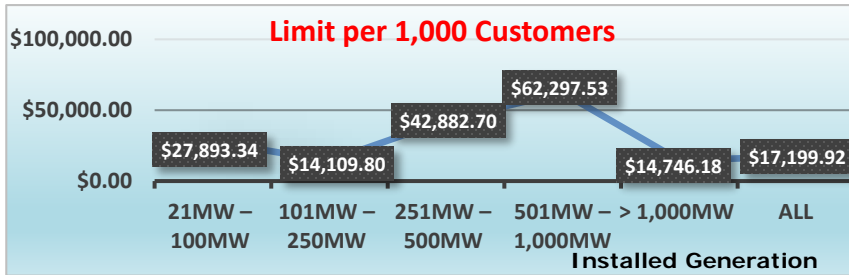
APPA MEMBER CYBER LIABILITY DEDUCTIBLES



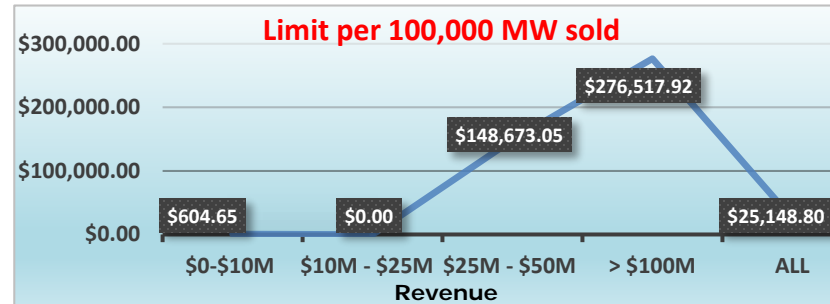
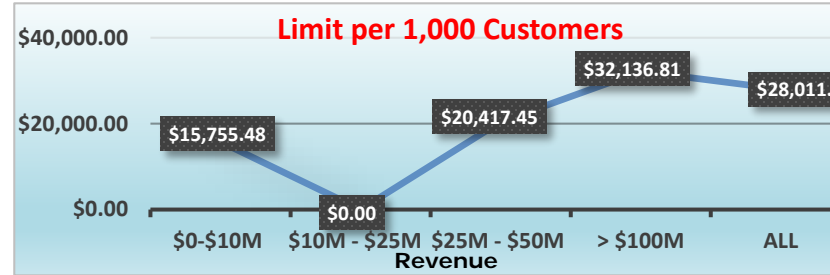
APPA MEMBER CYBER LIABILITY LIMITS



GENERATOR LIMITS



NON GENERATOR LIMITS



Cyber Insurance Rating/Coverage Items

Pricing/Rating Methodology

- Rating in Transition for Power/Utilities
 - Traditionally # of Personal Records (Retail/Banking Approach)
 - Revenues Now Dominant Factor for Power & Utilities
- Pricing Inconsistent Across Underwriters
 - Obtain Several Quotes
- <\$100m In Revenues Access \$0 Deductible Program
 - APPA Program

Coverage Overview

- Coverage
 - Security & Privacy Liability
 - Regulatory Defense Fines/Penalties
 - Media Liability
 - Notification Expense/Credit Monitoring
 - Network Interruption/Data Restoration
 - Loss of Profit & Extra Expense to Operate
 - Network Extortion
 - Social Engineering Fraud
 - Crisis Management/Reputational Harm
- Services - Post Incident
 - (24/7) Triage Hotline Call To Report Incident, Start Triage
 - Claims Management - Process Management Including Legal Services
 - Computer Forensic Services - Assessment of Breach Impact and the "How and When"
 - Notification/Call Center Services - Instructions for Response,
 - Fraud Resolution Services - Credit/ID Theft Monitoring & Remediation.
 - Public Relations and Crisis Management Services

3rd Party Liability Coverage

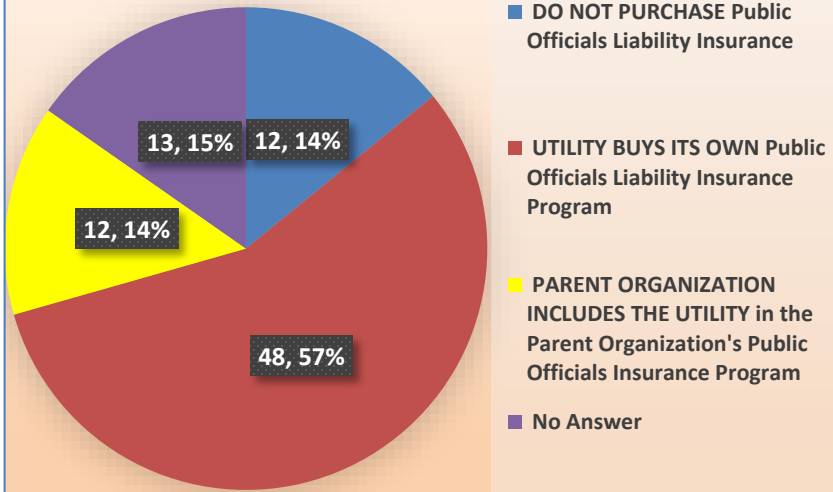
1st Party Coverage

US Market - Directors & Officers Liability

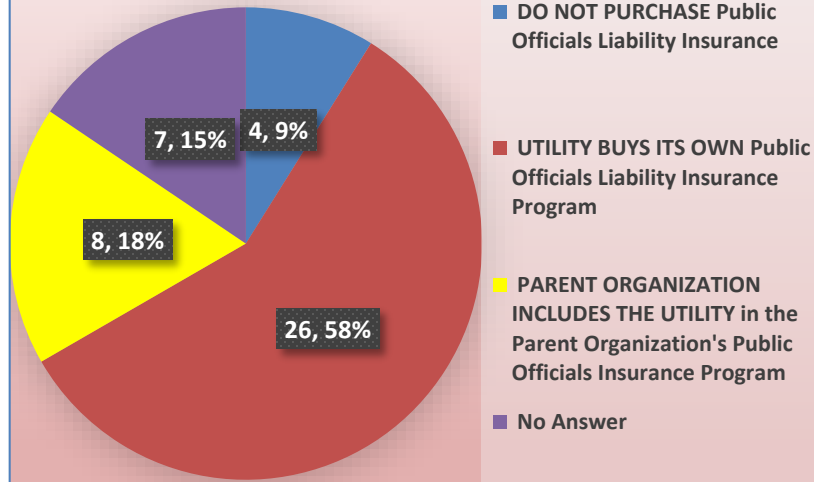
- D&O renewal pricing modestly firming for all industries.
- Q4-18 D&O renewals for all industries saw an average 5.4% primary increase and 3.4% total program increase.
- 50% of power & utility clients saw some level of increase on their total D&O program renewals in Q4-18.
- Key drivers of D&O rate pressure include:
 - Record # of securities class action (SCA) filings and increasing probabilities for such lawsuits. According to NERA, 2018 saw 441 SCAs involving 8.2% of all publicly listed companies.
 - Continuing trend of “event driven” litigation which include wildfires in the P&U segment.
 - Merger objection cases which accounted for 48% of all filings respectively.
- AEGIS continuity credit and loyalty distribution significant drivers favorably impacting business retention
- Power & Utility remains a generally favorable class for D&O underwriters

POWER & UTILITIES - PUBLIC OFFICIALS LIABILITY - Purchasing

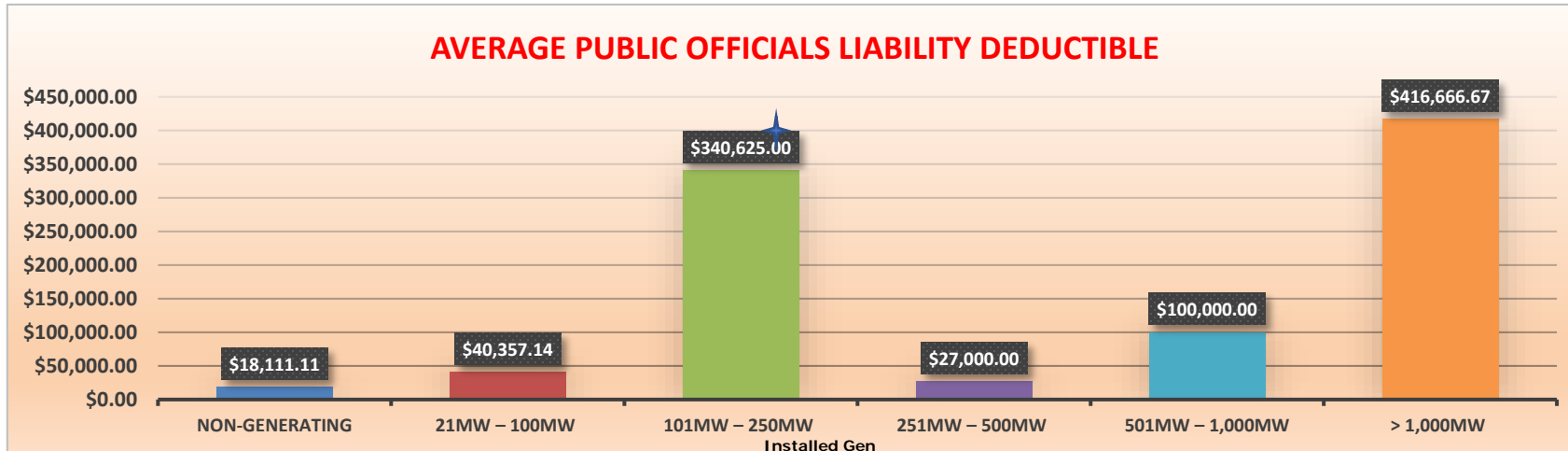
WHO BUYS YOUR PUBLIC OFFICIALS LIABILITY?



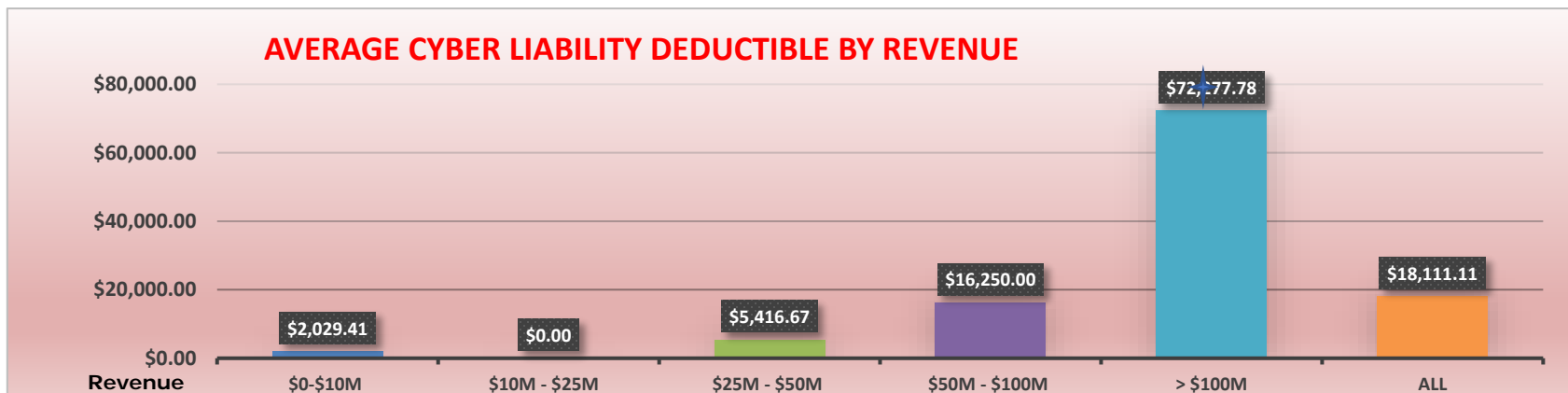
WHO BUYS NON-GENERATORS PUBLIC OFFICIALS LIABILITY?



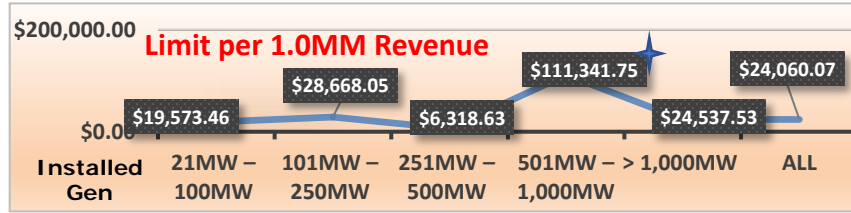
POWER & UTILITIES PUBLIC OFFICIALS LIABILITY DEDUCTIBLES



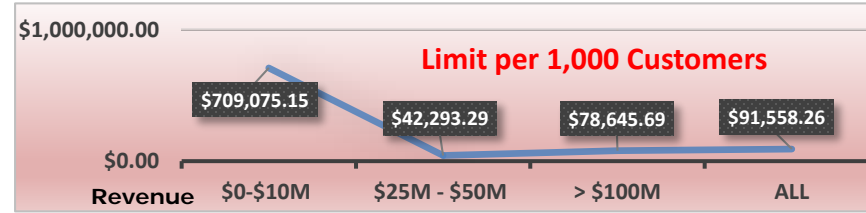
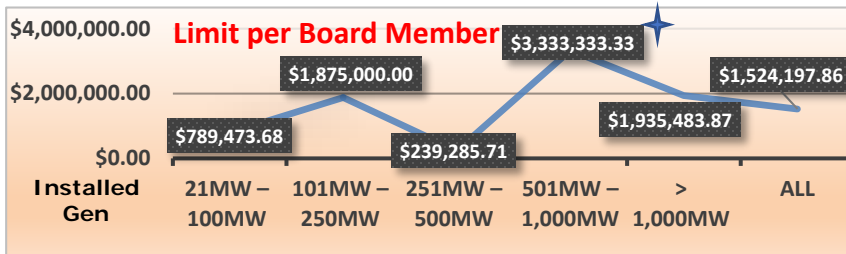
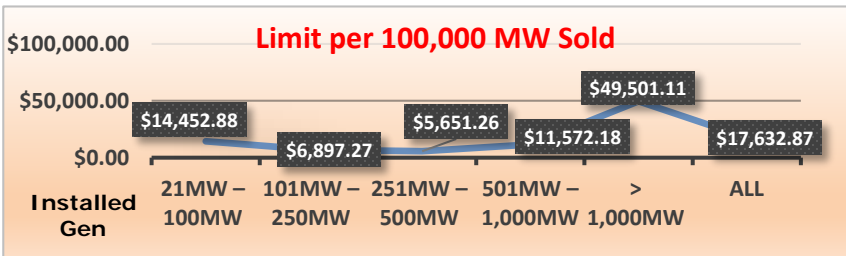
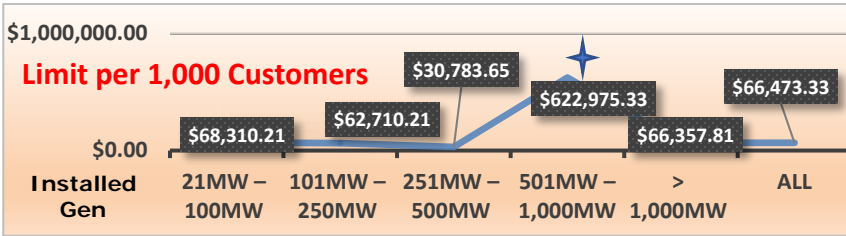
★ Small Respondent Number



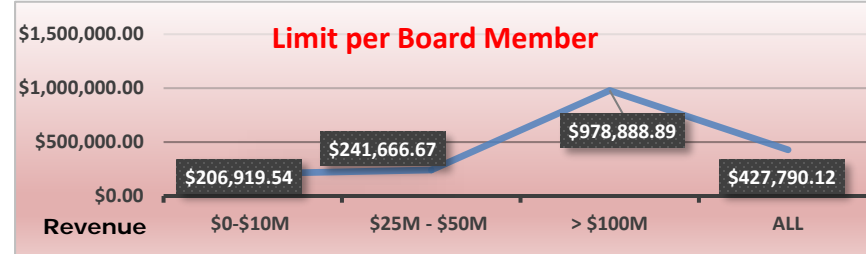
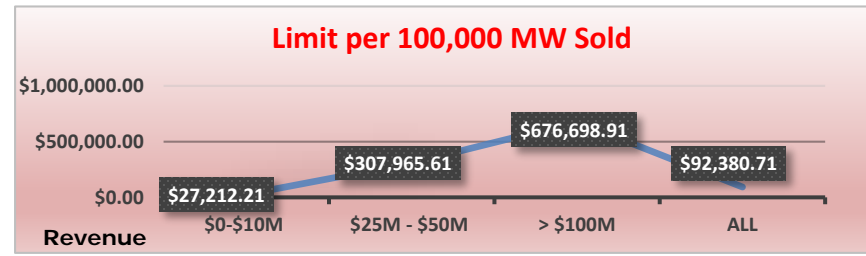
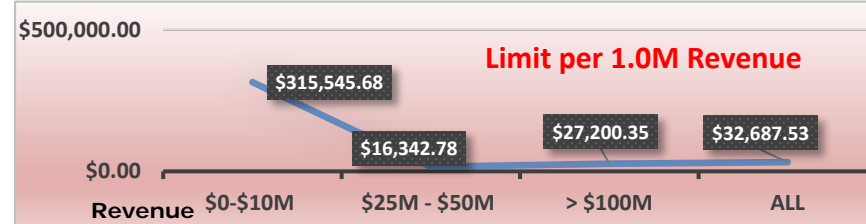
POWER & UTILITIES PUBLIC OFFICIALS LIABILITY LIMITS



GENERATOR LIMITS



NON-GENERATOR LIMITS



★ Small Respondent Number

Management Liability Coverage Items

Pricing - Based on Revenues

Public Officials Management Liability

- Protection for the Management of the Public Entity
 - Elected/ appointed officials, commissions, boards, employees,
 - Side A - Personal liability When Entity is prohibited or not legally required to indemnify.
 - Side B - Reimbursement for the entity when it indemnifies the officials.
 - Side C - Public Entity Liability

Other Management Liability Coverages

- Professional Liability - Entity/Officials/Employees in the performance of duties
 - Failure to provide services
 - Zoning and land use
- Employment Practices Liability
- Fiduciary Liability - E & O for administration of Health/welfare/pension plans
- Crime Coverage

Budget issues

Employed Professional Coverage

• Coverage Items to Review

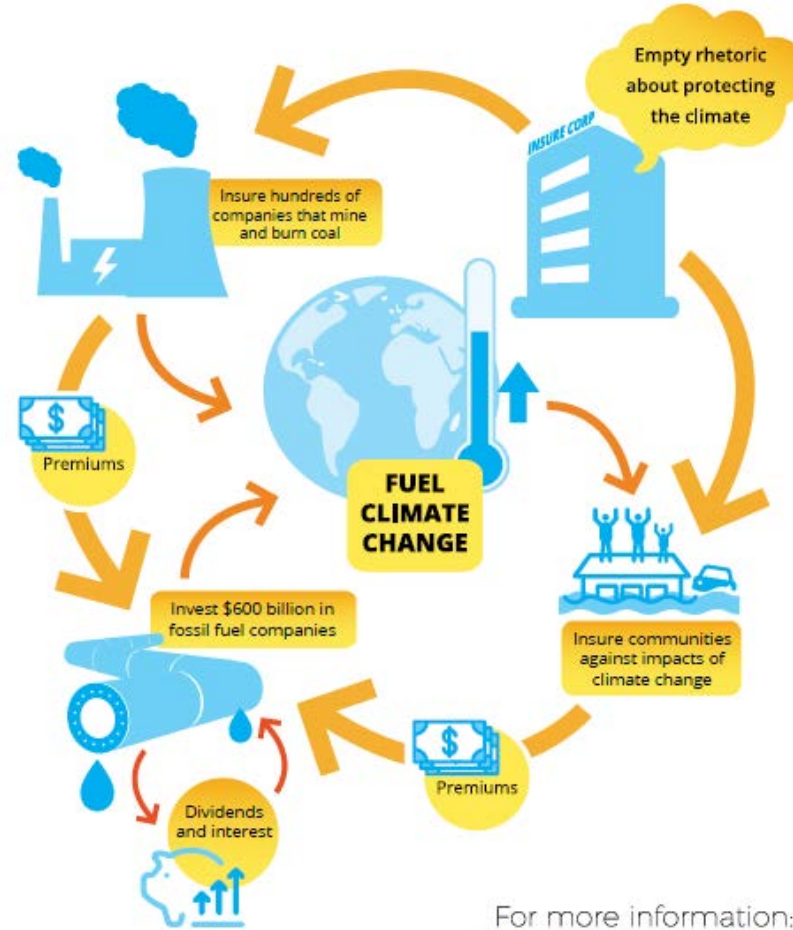
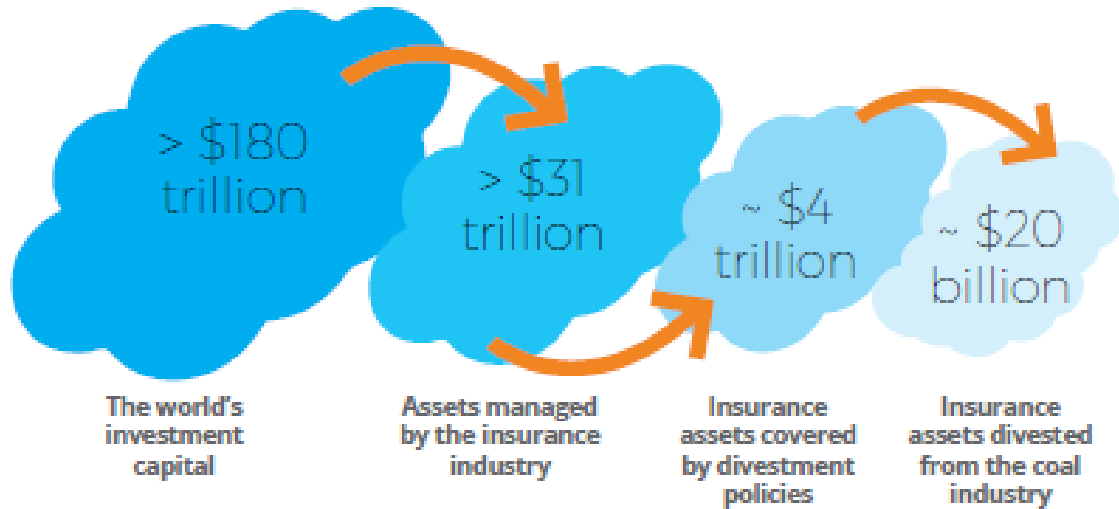
- Sovereign Immunity does not come into play under federal laws
 - Regulatory / EPL / antitrust / Discrimination, etc.
- Municipal bonds are debt obligations issued by a municipality to fund activities and projects within the municipality. Not all Insurance Forms will cover this exposure.
- Only certain Insurance Forms will cover non-monetary / injunctive relief claims up to the full policy limit.

• Factors Affecting Need for EPL Purchase:

- Economic Climate
- Increased oversight by regulators
- Active Plaintiff Bar in Area
- Changing Workforce
- Sexual harassment claim trends

Looking Forward

Climate Activism and Its Impact on Insurers



Climate activists are focused on choking off capital from coal, oil and natural gas enterprises. They have had some success to date, and are continuing to pressure insurers across the globe.

For more information: UNFRIENDCOAL.COM

“Unfriend Coal” Proposed Limitations

- Offer no insurance, including renewing existing policies, to companies that meet any one of the following criteria:
 - ***They derive at least 30% of their revenues or power generation from coal;***
 - ***They produce, trade or consume at least 20 million tons of coal annually;***
 - ***They plan investments in new coal mines, power plants or infrastructure.***
- Insurers most supportive thus far include:
 - Swiss Re SCOR Zurich
 - AXA Allianz
 - FM Global has been sympathetic.
- Australian coal mine on hold as insurance capacity is scarce.



Evolving Global Risk Landscape (2009-2019)

Top 5 Global Risks in terms of likelihood

■ Economic
 ■ Environmental
 ■ Geopolitical
 ■ Societal
 ■ Technological

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	Asset price collapse	Asset price collapse	Storms and cyclones	Income disparity	Income disparity	Income disparity	Interstate conflict	Involuntary migration	Extreme weather	Extreme weather	Extreme weather
2	Slowing Chinese economy	Slowing Chinese economy	Flooding	Fiscal imbalances	Fiscal imbalances	Extreme weather	Extreme weather	Extreme weather	Involuntary migration	Natural catastrophes	Climate change mitigation and adaption failure
3	Chronic disease	Chronic disease	Corruption	Greenhouse gas emissions	Greenhouse gas emissions	Unemployment/under-employment	National governance failures	Weak climate change response	Natural catastrophe	Cyberattacks	Natural catastrophes
4	Global governance gaps	Fiscal crises	Biodiversity loss	Cyber attacks	Water supply crises	Climate change	State collapse	Interstate conflict	Terrorist attack	Data fraud	Data fraud
5	Retrenchment from globalisation	Global governance gaps	Climate change	Water supply crises	Aging population	Cyberattacks	High unemployment	Natural catastrophes	Data fraud	Climate change adaption failure	Cyberattacks

In recent years, environmental, technological, and geopolitical threats have come to supplant economic risks as issues of greatest concern

Top 5 Global Risks in terms of impact

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	Asset price collapse	Asset price collapse	Fiscal crises	Systematic financial failure	Systematic financial failure	Fiscal crises	Water crises	Weak climate change response	WMDs	WMDs	WMDs
2	Retrenchment from globalisation	Retrenchment from globalisation	Climate change	Water supply crises	Water supply crises	Climate change	Infectious diseases	WMDs	Extreme weather	Extreme weather	Climate change mitigation and adaption failure
3	Oil and gas price spike	Oil price spike	Geopolitical conflict	Food crises	Fiscal imbalances	Water crises	WMDs	Water crises	Natural catastrophes	Natural catastrophes	Extreme weather
4	Chronic disease	Chronic disease	Asset price collapse	Fiscal imbalances	WMDs	Unemployment/under-employment	Interstate conflict	Involuntary migration	Water crises	Climate change adaption failure	Water crises
5	Fiscal crises	Fiscal crises	Extreme energy price volatility	Volatility in energy and agricultural prices	Weak climate change response	Critical ICT systems breakdown	Weak climate change response	Energy price shock	Weak climate change response	Water crises	Natural catastrophes

Source: World Economic Forum, *Global Risks Report 2019*

Insurance Analytics - An Increasingly Essential Tool

“Analytics relative to past and future loss data are becoming an absolute necessity to intelligently negotiate optimal pricing, program design, and collateral. Predictive modeling has become a key underwriting tool for pricing and post-loss mitigation.”

USI 2018 Insurance Market Outlook – p. 11

THANK YOU