



Frequently Mitigated Unit Adders Final Report

[Frequently Mitigated Unit Adders](#)

1. Issue Summary

Frequently Mitigated Units (FMU) and Associated Units (AU) are generating units in the PJM Energy Market that are allowed to include an adder in their cost-based offers based on the frequency with which they are offer capped. FMU adders were first implemented to help ensure that units that run primarily in a cost capped mode can cover their avoidable or going-forward costs. The FMU rules provide for a set of graduated adders associated with increasing levels of offer capping. Units capped for 60 percent or more of their run hours and less than 70 percent are entitled to an adder of \$20 per MWh. Units capped 70 percent or more of their run hours and less than 80 percent are entitled to an adder of either 15 percent of their cost-based offer (not to exceed \$40) or \$30 per MWh. Units capped 80 percent or more of their run hours are entitled to an adder of \$40 per MWh or the unit-specific, going-forward costs of the affected unit. These categories are designated Tier 1, Tier 2 and Tier 3 respectively.

An AU, or associated unit, is a unit that is physically, electrically and economically identical to an FMU, but does not qualify for the same FMU adder. The AU designation was implemented to ensure that the associated unit is not dispatched in place of the FMU, resulting in no effective adder for the FMU.

FMU adders were added to the market rules in 2005 in order to address concerns around revenue inadequacy. Since that time, PJM has undertaken major redesign of its market rules addressing revenue adequacy, including implementation of the RPM capacity market construct in 2007, and significant changes to the scarcity pricing rules in 2012. As such, stakeholders elected to re-examine the FMU adders and determine if they were still appropriate.

2. Issue History

[Problem Statement and Issue Charge](#)

Problem statement brought forward by: The Independent Market Monitor

Approved by: The Market Implementation Committee approved the problem statement at the May 2013 meeting and elected to address the issue itself at sub-group meetings.

Meeting history: Meetings began in November 2013, and there were nine meetings on this issue

3. Packages

Package G

Package G leave the adder levels for FMUs unchanged, but limits total recovery due to the adders within the rolling twelve month evaluation period. The recovery from the adders is capped at 12 percent of gross CONE for the unit's LDA x Unit ICAP. Once this level is reached the generator would only be allowed to include the normal ten percent adder. RMR units would not be eligible for adders in Package G. Package G differs from other packages in that it offers generation owners the ability to speak with PJM and the



MMU and proceed with a filing to FERC if they are not receiving adequate going forward costs for the generating unit. Package G received the most support in voting at the MIC and is the primary motion.

Package H

Package H is very similar to the current rules. Instead of the Tier 2 adder being \$30 or 15 percent of the cost based offer (not to exceed \$40), Package H would make this adder a flat \$30.

Package F prime

This package introduces specific adder amounts based on run hours, for any unit with greater than 500 run hours or if a unit is not a capacity resource (regardless of run hours).

Tier 3 adder: \$40 for units below 500 run hours, 25% of cost offer above 500 run hours;

Tier 2 adder: \$30 for units below 500 run hours, 20% of cost offer above 500 run hours;

Tier 1 adder: \$20 for units below 500 run hours, 15% of cost offer above 500 run hours;

AUs will receive the same adder level as the FMU they are similar to. Among a group of AUs, the highest run hours among them will be used to determine which adder level is allowed. RMR units would not be eligible for adders under Package F. FRR are eligible, capacity and non-capacity resources are eligible; if any of the unit's offer can be mitigated by PJM, then the generator is eligible for adders.

4. Comparative Summary

| Key elements | Status Quo | Package F prime | Package G | Package H |
|-----------------------|-----------------|---|---|----------------|
| Adder level | \$40/\$30*/\$20 | \$40/\$30/\$20 for under 500 run hours. 25%/20%/15% if over 500 run hours | \$40/\$30/\$20 limited to 12% of gross CONE for that unit's LDA | \$40/\$30/\$20 |
| RMR units eligible? | Yes | No | No | Yes |
| Adders for FRR units? | Yes | Yes | Yes | Yes |
| External units? | Yes | Yes | Yes | Yes |
| Additional screens? | No | No | No | No |

5. Standing Committee Vote Results

| MIC Vote May 2014 | | | | |
|-------------------|-----------|-----------------|-----------|-----------|
| | Package A | Package F prime | Package G | Package H |
| Yes | 71 | 90 | 88 | 72 |



| | | | | |
|------------------|-----|-----|-----|-----|
| No | 93 | 60 | 48 | 44 |
| Abstain | 14 | 21 | 31 | 50 |
| Total | 164 | 150 | 136 | 116 |
| Level of Support | 43% | 60% | 65% | 62% |

Appendix I: Voting and Polling Results

| FMU Polling Results April 2014 | | | | | | | |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| | Package A | Package D | Package E | Package F | Package G | Package H | Status Quo |
| Yes | 37 | 0 | 34 | 94 | 98 | 98 | 77 |
| No | 100 | 138 | 103 | 44 | 40 | 40 | 52 |
| Maybe | 1 | 0 | 0 | 0 | 0 | 0 | 9 |
| Total | 138 | 138 | 137 | 138 | 138 | 138 | 138 |
| Level of Support | 27% | 0% | 25% | 68% | 71% | 71% | 56% |

| FMU Polling Results February 2014 | | | | | | |
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|------------|
| | Package A | Package B | Package C | Package D | Package E | Status Quo |
| Yes | 20 | 34 | 19 | 51 | 30 | 52 |
| No | 65 | 52 | 67 | 35 | 56 | 34 |
| Maybe | 1 | 0 | 0 | 0 | 0 | 0 |
| Total | 86 | 86 | 86 | 86 | 86 | 86 |
| Level of Support | 23% | 40% | 22% | 59% | 35% | 60% |

| FMU Polling Results February 2014 | | | |
|-----------------------------------|--------|--------|--------|
| | Tier 1 | Tier 2 | Tier 3 |
| Yes | 34 | 31 | 72 |
| No | 51 | 40 | 0 |
| Maybe | 1 | 15 | 14 |
| Total | 86 | 86 | 86 |
| Level of Support | 40% | 36% | 84% |



Appendix II: Stakeholder Participation

| Name | Company | Sector |
|---------------------|--|----------------------|
| Ainspan, Malcolm | Energy Curtailment Specialists, Inc. | Other Supplier |
| Anders, David | PJM Interconnection, LLC | Not Applicable |
| Applebaum, David | NextEra Energy Power Marketing, LLC | Generation Owner |
| Baran, Eric | Allegheny Electric Cooperative, Inc. | Electric Distributor |
| Barker, Jason | Exelon Business Services Company LLC | Transmission Owner |
| Bash, David | Enerwise Global Technologies, Inc. | Other Supplier |
| Bassett, Jeffrey | BP Energy Company | Other Supplier |
| Batta, Michael | Virginia Electric & Power Company | Transmission Owner |
| Benchek, Jim | FirstEnergy Solutions Corporation | Transmission Owner |
| Berger, Ken | Dominion Virginia Power | Not Applicable |
| Berlinski, Michael | Beacon Power, LLC | Other Supplier |
| Bhuiyan, Mashuur | PPL EnergyPlus, L.L.C. | Transmission Owner |
| Bloom, David | Baltimore Gas and Electric Company | Transmission Owner |
| Bolan, Martin | FirstEnergy Solutions Corporation | Transmission Owner |
| Bonanni, John | NRG Power Marketing LLC | Generation Owner |
| Borgatti, Michael | Gable and Associates | Not Applicable |
| Bowring, Joseph | Monitoring Analytics, LLC | Not Applicable |
| Breidenbaugh, Aaron | EnerNOC, Inc. | Other Supplier |
| Bresler, Stu | PJM Interconnection, LLC | Not Applicable |
| Brodbeck, John | Potomac Electric Power Company | Electric Distributor |
| Brown, Richard | PJM Interconnection, LLC | Not Applicable |
| Bruce, Susan | McNees, Wallace and Nurick, LLC | Not Applicable |
| Butler, James | NiSource Inc. | Not Applicable |
| Buttner, Sally | Energy Transition Consulting, L.L.C. | Other |
| Carbonneau, Andrew | Open Access Technology International, Inc. | Not Applicable |
| Carmean, Gregory | OPSI | Not Applicable |
| Carretta, Kenneth | PSEG Energy Resources and Trade LLC | Transmission Owner |
| Chen, Xu | Other | Not Applicable |
| Chin, Brian | Citigroup Energy, Inc. | Other Supplier |
| Ciabattoni, Joe | PJM Interconnection, LLC | Not Applicable |
| Citrolo, John | PSEG Energy Resources and Trade LLC | Transmission Owner |
| Coyle, Billy | Dominion Virginia Power | Not Applicable |
| Currier, Jeff | Dominion Virginia Power | Not Applicable |
| Dadourian, John | Monitoring Analytics, LLC | Not Applicable |
| De Geeter, Ralph | Maryland Public Service Commission | Not Applicable |
| Dessenger, Harry | Customized Energy Solutions, Ltd.* | Not Applicable |
| Dirani, Rami | PJM Interconnection, LLC | Not Applicable |
| Dorko, Keri | Monitoring Analytics, LLC | Not Applicable |
| Dosunmh, Ade | Capacity Market Partners, LLC | Other Supplier |
| Dugan, Bill | Customized Energy Solutions, Ltd.* | Not Applicable |
| Dugan, Chuck | East Kentucky Power Cooperative, Inc. | Transmission Owner |



| | | |
|----------------------|--|----------------------|
| Dupeire, Michael | Ventyx | Not Applicable |
| Engle, Andrew | PJM Interconnection, LLC | Not Applicable |
| Erickson, Bruce | Allegheny Electric Cooperative, Inc. | Electric Distributor |
| Esposito, Pati | Atlantic Grid Operations A, LLC | Other Supplier |
| Etnoyer, Scott | Raven Power Marketing LLC | Generation Owner |
| Everngam, Scott | Federal Energy Regulatory Commission (The) | Not Applicable |
| Fabiano, Janell | PJM Interconnection, LLC | Not Applicable |
| Farber, John | DE Public Service Commission | Not Applicable |
| Fernandes, John | Baltimore Gas and Electric Company | Transmission Owner |
| Fernandez, Jonathan | Federal Energy Regulatory Commission (The) | Not Applicable |
| Filomena, Guy | Customized Energy Solutions, Ltd.* | Not Applicable |
| Fitch, Neal A. | GenOn Energy Management, LLC | Generation Owner |
| Flaherty, Dale | Duquesne Light Company | Transmission Owner |
| Foladare, Kenneth | Iron Mountain Generation LLC | Generation Owner |
| Ford, Adrien (Chair) | PJM Interconnection, LLC | Not Applicable |
| Freeman, Al | Michigan Public Service Commission | Not Applicable |
| Frost, Jodi | Moxie Liberty LLC | Other Supplier |
| Fuess, Jay | White Pine Energy Consulting | Not Applicable |
| Galicia, Louis | Ventyx | Not Applicable |
| Garbini, Marj | Potomac Electric Power Company | Electric Distributor |
| Gell, Richard | Ontario Power Generation Inc. | Other Supplier |
| Gilani, Rehan | ConEdison Energy, Inc. | Other Supplier |
| Godson, Gloria | Potomac Electric Power Company | Electric Distributor |
| Gorman, Kevin | Highlands Energy Group LLC (The) | Other Supplier |
| Greening, Michele | PPL EnergyPlus, L.L.C. | Transmission Owner |
| Griffiths, Dan | Pennsylvania Office of Consumer Advocate | End User Customer |
| Guilbault, Louis | H.Q. Energy Services (U.S.), Inc. | Other Supplier |
| Hanson, Mark | Illinois Commerce Commission | Not Applicable |
| Hastings, David | DhastCo, LLC | Not Applicable |
| Haynes, Greg | Energy Authority, Inc. (The) | Other Supplier |
| Heidorn, Rich | RTO Insider | Not Applicable |
| Heizer, Fred | Public Utilities Commission of Ohio | Not Applicable |
| Hirsch, Stephen | Downes Associates, Inc. | Other Supplier |
| Hoatson, Tom | Riverside Generating, LLC | Other Supplier |
| Holdbrook, Ruth | Northern Virginia Electric Cooperative | Electric Distributor |
| Holland, Risa | PJM Interconnection, LLC | Not Applicable |
| Horstmann, John | Dayton Power & Light Company (The) | Transmission Owner |
| Hsia, Eric | PJM Interconnection, LLC | Not Applicable |
| Hubbard, Lance | Allegheny Electric Cooperative, Inc. | Electric Distributor |
| Hugee, Jacquelynn | PJM Interconnection, LLC | Not Applicable |
| Hurwich, Mark | Elliott Bay Energy Trading, LLC | Other Supplier |
| Hyzinski, Tom | PPL EnergyPlus, L.L.C. | Transmission Owner |
| James, Eric | Appalachian Power Company (AEP Generation) | Transmission Owner |
| Janicki, Diane | Edison Mission Marketing & Trading, Inc. | Generation Owner |
| Jennings, Kenneth | Duke Energy Business Services LLC | Generation Owner |
| Jett, William | Duke Energy Business Services LLC | Generation Owner |
| Johnson, Carl | Customized Energy Solutions, Ltd.* | Not Applicable |
| Jostworth, Kimberly | RBC Energy Services LP | Other Supplier |
| Josyula, Siva | Monitoring Analytics, LLC | Not Applicable |



| | | |
|--------------------------------|--|----------------------|
| Kazerooni, Hamid | PPL EnergyPlus, L.L.C. | Transmission Owner |
| Keech, Adam | PJM Interconnection, LLC | Not Applicable |
| Kerecman, Joseph | Calpine Energy Services, L.P. | Generation Owner |
| Kilgallen, Kevin | Emerald Energy | Not Applicable |
| Kirby, James | PJM Interconnection, LLC | Not Applicable |
| Knies, Heather | EDF Trading North America, LLC | Other Supplier |
| Kogut, George | New York Power Authority | Other Supplier |
| Lacy, Catharine | Dominion Virginia Power | Not Applicable |
| Levine, Jeffrey | IPR-GDF SUEZ Energy Marketing NA, Inc. | Other Supplier |
| Lieberman, Steven | Old Dominion Electric Cooperative | Electric Distributor |
| Logan, Sharon | Federal Energy Regulatory Commission (The) | Not Applicable |
| Long, Scott | Allegheny Electric Cooperative, Inc. | Electric Distributor |
| Luna, Joel | Monitoring Analytics, LLC | Not Applicable |
| Mabry, David | McNees Wallace & Nurick LLC | Not Applicable |
| Mahoney, Julieanne | New York State Electric & Gas Corporation | Other Supplier |
| Maloney, Peter | Platts | Not Applicable |
| Mancuso, Maria | Baltimore Gas and Electric Company | Transmission Owner |
| Manning, James | North Carolina Electric Membership Corporation | Electric Distributor |
| Mariam, Yohannes | Office of the Peoples Counsel for the District of Columbia | End User Customer |
| Marks, Lorrie | PJM Interconnection, LLC | Not Applicable |
| Martin, Valerie | Federal Energy Regulatory Commission (The) | Not Applicable |
| Marton, David | FirstEnergy Solutions Corporation | Transmission Owner |
| Marzewski, Skyler | Monitoring Analytics, LLC | Not Applicable |
| Maucher, Andrea | State of Delaware, Div. of the Public Advocate | End User Customer |
| McAlister, Lisa | American Municipal Power, Inc. | Electric Distributor |
| McNamara, Sean | PJM Interconnection, LLC | Not Applicable |
| Miller, John | Commonwealth Edison Company | Transmission Owner |
| Minalga, Jason | Invenergy LLC | Generation Owner |
| Mok, Alan | Duke Energy Kentucky, Inc. | Transmission Owner |
| Mount, Colin | FirstEnergy Solutions Corp. | Transmission Owner |
| Mueller, Ron | Twin Eagle Resource Management, LLC | Other Supplier |
| Murti, Prashant | DB Energy Trading LLC | Other Supplier |
| Nobile, Joe | Richland-Stryker Generation LLC | Generation Owner |
| Norton, Chris | American Municipal Power, Inc. | Electric Distributor |
| O'Connell, Robert | JPMorgan Ventures Energy Corporation | Other Supplier |
| Ondayko, Brock | Appalachain Power Company | Transmission Owner |
| Owens, Christina | North Carolina Electric Membership Corporation | Electric Distributor |
| Pakela, Greg | DTE Energy Trading, Inc. | Other Supplier |
| Parker, Seth | Levitan Associates | Not Applicable |
| Patel, Munjal | NRG Power Marketing LLC | Generation Owner |
| Patten, Kevin | Appalachain Power Company | Transmission Owner |
| Peoples, John | Duquesne Light Company | Transmission Owner |
| Portray, Annaka (Secretary) | PJM Interconnection, LLC | Not Applicable |
| Pratzon, David | GT Power Group | Not Applicable |
| Rajan, Abhijit | Dominion Resources | Not Applicable |
| Razze, Scott | Potomac Electric Power Company | Electric Distributor |
| Robson, Matt | SESCO Enterprises LLC | Other Supplier |
| Rohrbach, John | Southern Maryland Electric Cooperative | Electric Distributor |



| | | |
|----------------------|--|----------------------|
| Rothman, Rich | PJM Interconnection, LLC | Not Applicable |
| Salaneck, Alexandra | Monitoring Analytics, LLC | Not Applicable |
| Scarpignato, David | Direct Energy Business, LLC | Other Supplier |
| Schmitt, Jeff | PJM Interconnection, LLC | Not Applicable |
| Schofield, William | Customized Energy Solutions, Ltd.* | Not Applicable |
| Scoglietti, Barbara | Tangent Energy Solutions, Inc. | Other Supplier |
| Scott, Charles | DC Energy LLC | Other Supplier |
| Seymour, Melissa | IBERDROLA RENEWABLES, LLC | Generation Owner |
| Shadle, David | Power Advance LLC | Not Applicable |
| Shparber, Steven | PJM Interconnection, LLC | Not Applicable |
| Sillin, John | Federal Energy Regulatory Commission (The) | Not Applicable |
| Siva, J. | Monitoring Analytics, LLC | Not Applicable |
| Skucas, Ruta | Pierce Atwood | Not Applicable |
| Smoots, Carol | Pierce Atwood | Not Applicable |
| Snow, Robert | Federal Energy Regulatory Commission (The) | Not Applicable |
| Snyder, Sue | PJM Interconnection, LLC | Not Applicable |
| Stadelmeyer, Rebecca | Exelon Business Services Company, LLC | Transmission Owner |
| Staska, Stephanie | Twin Cities Power, LLC | Other Supplier |
| Stuchell, Jeff | FirstEnergy Solutions Corporation | Transmission Owner |
| Sudhakara, Raghu | Rockland Electric Company | Transmission Owner |
| Suh, Jung | Noble Americas Energy Solutions LLC | Other Supplier |
| Summe, Martin | North Carolina Municipal Power Agency # 1 | Other Supplier |
| Summers, Theodore | PSEG Energy Resources and Trade LLC | Transmission Owner |
| Swalwell, Brad | Tangent Energy Solutions, Inc. | Other Supplier |
| Terry, Jonathan | Allegheny Electric Cooperative, Inc. | Electric Distributor |
| Trayers, Barry | Citigroup Energy, Inc. | Other Supplier |
| Trevino, Rita | Siemens Industry, Inc. | Other Supplier |
| Tribulski, Jennifer | PJM Interconnection, LLC | Not Applicable |
| Two, User | XO Energy MA, LP | Other Supplier |
| Wadsworth, Joseph | Vitol Inc. | Other Supplier |
| Walter, Laura | PJM Interconnection, LLC | Not Applicable |
| Weiss, Glenn | PJM Interconnection, LLC | Not Applicable |
| Wellborn, Sam | Division of the Public Advocate of State of Delaware | End User Customer |
| Wilkins, James | North Carolina Electric Membership Corporation | Electric Distributor |
| Williams, Stanley | PJM Interconnection, LLC | Not Applicable |
| Wilson, James | Wilson Energy Economics | Not Applicable |
| Wingfield, Amy | Raven Power Marketing LLC | Generation owner |
| Wisersky, Megan | Madison Gas & Electric Company | Other Supplier |
| Woodyard, Phillip | Washington Gas Energy Services, Inc. | Other Supplier |
| Xenopoulos, Damon | Brickfield, Burchett, Ritts, and Stone, PC | Not Applicable |
| Zadlo, Thomas | PJM Interconnection, LLC | Not Applicable |



Appendix III: Proposals Not Meeting The Threshold

Package A

This package is a combined effort of PJM and the Independent Market Monitor. The level of the FMU adders would be similar to today at \$20, \$30, and \$40 for Tier 1, Tier 2, and Tier 3 respectively. However in addition to the rolling twelve month screen on the levels of offer capping, there will be an additional check to determine if the net revenues of the generator in that period were adequate to cover their going forward costs (as measured by the Avoidable Cost Rate). Only those frequently mitigated generators that did not receive adequate revenues to cover their going forward costs will be eligible to receive FMU adders. Units that are receiving compensation for going forward costs outside the RPM Capacity Market (such as FRR units) would not be eligible to receive FMU adders. External units would also not be eligible. RMR units would not be eligible for FMU adders.