

## **Markets and Reliability Committee** **PROPOSAL ALTERNATIVES REPORT**

January 26, 2012

### **Residual Zone Pricing**

The alternative proposals described below are recommended by the Market Implementation Committee to the Markets and Reliability Committee for selection of a single proposal to resolve this issue. More than one proposal was identified for consideration using the Tier 2 decision-making method of the PJM stakeholder process. They are listed in order of those achieving the highest support meeting the threshold of at least three Voting Members from at least two different sectors. This report was developed in accordance with procedures documented in Section 8 of the PJM Stakeholder Process Manual (M-34).

#### **Issue Description**

Residual Zone Pricing involves the creation of a new residual zone aggregate which contains all of the load buses in a physical zone, except it excludes any load that is being priced at specific non-zonal (or nodal) locations. In cases where there are multiple fully metered EDCs within a zone (currently the PPL and ATSI zones), the aggregates are created for each fully metered EDC. The RT price calculated for this residual zone aggregate would then be used to settle all non-nodal RT load in a given zone, rather than using the physical zone price, since the residual zone price more accurately reflects the load distribution of the remainder of the load in the zone. The residual zone aggregate would also be available for use in the FTR/ARR/DA markets.

The MIC reached general agreement on the business rules related to the implementation of residual zone pricing in most areas, with the exception of the following criteria. Polling was used to identify stakeholder support for different options addressing these open criteria. Packages were then created that combined different permutations of the options below. The remainder of the residual zone pricing business rules are consistent across each package.

- Implementation date – June 1, 2013, June 1, 2014 and June 1, 2015 implementation dates were considered
- Inclusion of an opt out provision - Allows EDCs to delay implementation of residual zone pricing for their entire zone by providing opt out notification to PJM
- Imposition of a sunset date (if opt out provision supported) – Date by which all zones must implement residual zone pricing
- Pricing point to be used for demand response settlement and dispatch – Use the pricing point at which the associated load is settled to dispatch and settle demand response, or use the physical zone to settle and dispatch demand response regardless of the pricing point at which the associated load is settled.
- Pricing points available as a sink pricing point on ARRs associated with load priced at the residual zone –



Allow ARR to sink only at the location at which the associated load is being priced, default ARR to the physical zone in order to preserve historical ARR entitlements, but allow LSEs to choose to sink ARR at the residual zone if they prefer their ARR to mirror the location at which their load is served, or default ARR to the residual zone, but allow LSEs to choose to sink ARR at the physical zone if desired.

### **1. Alternate 1 Proposal: 2015 No Opt Out – Option B**

This package received a 67% vote at the January MIC meeting. The voting results were as follows: 84 in favor, 42 against, 24 abstentions. This package is sponsored by PJM.

This package is defined as follows:

- June 1, 2015 implementation date
- No opt out provision – all load not priced at a specific nodal (or non-zonal) location must switch to residual zone pricing at the time of implementation
- DR settled and dispatched at the pricing point at which the associated load is settled
- ARRs associated with load priced at the residual zone must sink at the residual zone, with no option to choose the physical zone

### **2. Alternate 2 Proposal: 2015 No Opt Out – Option A**

This package did not meet the majority threshold at the January MIC meeting with only 49% in favor; however, it met the 3/2 threshold. The voting results were as follows: 67 in favor, 71 against, 12 abstentions. This package is sponsored by PJM.

This package is defined as follows:

- June 1, 2015 implementation date
- No opt out provision – all load not priced at a specific nodal (or non-zonal) location must switch to residual zone pricing at the time of implementation
- DR settled and dispatched at the pricing point at which the associated load is settled
- ARRs associated with load priced at the residual zone default to sinking at the residual zone, with an option for each LSE to choose the physical zone

### **3. Alternate 3 Proposal: 2013 No Opt Out – Option B**

This package did not meet the majority threshold at the January MIC meeting with only 42% in favor; however, it met the 3/2 threshold. The voting results were as follows: 61 in favor, 83 against, 1 abstention. This package is sponsored by PJM.

This package is defined as follows:

- June 1, 2013 implementation date

- No opt out provision – all load not priced at a specific nodal (or non-zonal) location must switch to residual zone pricing at the time of implementation
- DR settled and dispatched at the pricing point at which the associated load is settled
- ARRs associated with load priced at the residual zone must sink at the residual zone, with no option to choose the physical zone

#### **4. Alternate 4 Proposal: 2014 Sunsetting Opt Out**

This package did not meet the majority threshold at the January MIC meeting with only 27% in favor; however, it met the 3/2 threshold. The voting results were as follows: 35 in favor, 94 against, 13 abstentions. This package is sponsored by PJM.

This package is defined as follows:

- June 1, 2014 implementation date
- Opt out provision with a 2015 sunset date – Upon implementation of residual zone pricing, EDCs would be able to defer implementation of residual zone pricing on behalf of all non-nodally settled load in their zone by providing an opt out notification to PJM; however, that opt out provision would expire on June 1, 2015 at which point all non-nodally settled load must switch to residual zone pricing
- DR settled and dispatched at the pricing point at which the associated load is settled
- ARRs associated with load priced at the residual zone default to sinking at the residual zone, with an option for each LSE to choose the physical zone

#### **5. Alternate 5 Proposal: 2013 w/ 2015 Sunset Opt Out – Option A**

This package did not meet the majority threshold at the January MIC meeting with only 22% in favor; however, it met the 3/2 threshold. The voting results were as follows: 26 in favor, 94 against, 27 abstentions. This package is sponsored by PJM.

This package is defined as follows:

- June 1, 2013 implementation date
- Opt out provision with a 2015 sunset date – Upon implementation of residual zone pricing, EDCs would be able to defer implementation of residual zone pricing on behalf of all non-nodally settled load in their zone by providing an opt out notification to PJM; however, that opt out provision would expire on June 1, 2015 at which point all non-nodally settled load must switch to residual zone pricing
- DR settled and dispatched at the pricing point at which the associated load is settled
- ARRs associated with load priced at the residual zone default to sinking at the physical zone, with an option for each LSE to choose the residual zone

#### **6. Comparative Summary**

The above proposals received the highest support meeting the threshold of at least three Voting Members from at least two different sectors from possible alternatives elicited from this stakeholder group. A comparative narrative



summary of the proposals is provided here for understanding of their merits and shortfalls. The comparison is presented below as a comparison of the treatment of each design criteria, rather than comparison of the packages as a whole in order to provide insight into the drivers behind each option.

Implementation Date

The five packages differ in their treatment of the implementation date. June 2013 was the earliest that residual zone pricing could be implemented given the necessary FERC approvals that would need to be obtained prior to the annual ARR/FTR process for the planning period in which residual zone pricing would be implemented. PJM, and some stakeholders, favored the earliest possible implementation date in order to start using the more precise residual zone prices, as opposed to the physical zone prices that are currently used to settle the majority of RT load in the RTO as soon as possible. An earlier implementation date also allows the other benefits of residual to be realized as soon as possible. Other participants favored a later implementation date in order to allow for transition issues to be resolved, given that many participants had already entered into forward contracts to hedge their load at the physical zone. An earlier implementation date has the advantage of eliminating imprecision in RT load settlement as soon as possible, but may not allow adequate time for transition issues to be resolved. Whereas, a later implementation date has the advantage of allowing adequate time for transition issues to be resolved, but allows imprecision in RT load settlements to persist and delays the realization of residual zone pricing benefits for an additional number of years.

The chart below shows how the packages compare with regard to implementation date.

<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
<b>2015 No Opt Out – B</b>	<b>2015 No Opt Out - A</b>	<b>2013 No Opt Out – B</b>	<b>2014 Sunsetting Opt Out - A</b>	<b>2013 w/ 2015 Sunset Opt Out - A</b>
		June 2013		June 2013
			June 2014	
June 2015	June 2015			

Opt Out Provision and Sunset Date

The five packages also differ in their treatment of the opt out provision and sunset date. The majority of the packages include no opt out date, showing the preference for all load moving to residual zone pricing at the same time, which was echoed by many participants. However, some participants expressed that if an earlier implementation date was selected, the inclusion of an opt out provision would be important so that zones that could not adequately address all transition issues could delay implementation by a year or more.

The chart below shows how the packages compare with regard to opt out provision and sunset date.

<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
<b>2015 No Opt Out – B</b>	<b>2015 No Opt Out - A</b>	<b>2013 No Opt Out - B</b>	<b>2014 Sunsetting Opt Out – A</b>	<b>2013 w/ 2015 Sunset Opt Out - A</b>
No Opt Out	No Opt Out	No Opt Out		
			Opt Out with 2015 Sunset Date	Opt Out with 2015 Sunset Date

Pricing point to be used for demand response settlement and dispatch

The five packages are the same with respect to the pricing point that will be used for demand response settlement and dispatch. All packages propose that demand response resources be dispatched and settled using the same pricing point at which the associated load is settled. For load priced at the residual zone, that means demand response resources would be dispatched using the preliminary RT residual zone price and settled using the final residual zone price. This has the benefit of keeping demand response settlement consistent with the pricing point at which the load is settled, just as it is today.

However, some demand response providers have expressed a strong preference for having demand response dispatched and settled at the physical zone if the associated load is settled at the residual zone. This is because the final residual zone definition (and therefore price) will not be known until after RT load settlement data is submitted (approximately 2 – 3 business days after the operating date). Therefore, under the current proposals, demand resources would be dispatched using the preliminary RT residual zone price, or the most accurate possible forecast for the location at which the load is settled, creating a potential difference between the price at which the demand resources are dispatched and ultimately settled. Although demand resources would be eligible to be made whole up to their offer cost via balancing operating reserve for load response credits, some demand response providers remain uncomfortable with the current proposal because it reduces their ability to provide shadow settlements feedback to their customers on a near real-time basis.

Pricing points available as a sink pricing point on ARRs associated with load priced at the residual zone

The five packages differ in their treatment of the pricing points available as a sink pricing point on ARRs associated with load priced at the residual zone. Sinking the ARRs at the pricing point at which the load is settled is consistent with today’s existing business rules and maintains consistency between the location at which ARRs are distributed and the location at which the associated load is being served; however, it does not allow for preservation of historical ARR entitlements which are based on historically serving load at the physical zone (much like the source pricing points on ARRs are based on historical generation sources). Sinking ARRs at the physical zone by default and then allowing individual LSEs to make an annual election to sink their ARRs at the residual zone, if desired, allows LSEs to choose between preserving ARR entitlements or having their ARRs closely follow



the location at which their load is settled. Sinking ARR at the residual zone by default with an option to choose the physical zone as an alternative sink pricing point accomplishes the same purpose, but increases the occurrence of ARR sinking at the residual zone if you assume most LSEs will simply go with the default choice, thereby strengthening the link between ARR sink pricing points and the location at which the load is settled.

The chart below shows how the packages compare with regard to the pricing points available as a sink on ARR associated with load priced at the residual zone.

<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
<b>2015 No Opt Out - B</b>	<b>2015 No Opt Out - A</b>	<b>2013 No Opt Out - B</b>	<b>2014 Sunsetting Opt Out - A</b>	<b>2013 w/ 2015 Sunset Opt Out - A</b>
ARR sink is the pricing point at which the load is settled.	ARR sink defaults to residual zone, but LSEs can choose to sink ARR at physical zone	ARR sink is the pricing point at which the load is settled.	ARR sink defaults to residual zone, but LSEs can choose to sink ARR at physical zone	ARR sink defaults to physical zone, but LSEs can choose to sink ARR at the residual zone

The remainder of the residual zone pricing business rules are consistent across each package. The remainder of the business rules can be found in the supplemental document listed in Appendix II.

## **7. Stakeholder Process Summary**

This issue has been vetted thoroughly in the PJM stakeholder process. A capsule summary is provided here. Also, see Appendix II for a list of links to supplemental stakeholder documents accompanying this report.

Residual Zone Pricing is an initiative that PJM brought to the Market Settlements Subcommittee (MSS) for its consideration in September 2010. The MSS developed the proposal throughout the course of several meetings during late 2010 and early 2011. Since this initiative was started prior to the implementation of the new GAST Consensus Based Issue Resolution (CBIR) process, a consensus solution matrix was not developed for this proposal. The MSS reached general agreement on a proposal in June 2011 and forwarded the proposal to the MIC for consideration. Initial discussions at both the MIC and MRC revealed divergent opinions with respect to the design criteria noted above.

After soliciting feedback on potential options to address these open design criteria, the MIC then undertook two polls to refine the residual zone pricing proposal. The first poll gathered feedback on the level of support for each of the options for addressing each open design criterion. Based on the results of that “options poll” and stakeholder discussion, several packages with different permutations of the options for each design criterion were created. PJM then issued a “package poll” to gather feedback on which packages were most favored and should



be put forth for an official MIC vote. Eleven packages were considered in that poll. The five packages listed above were chosen to move forward for an official vote since they received the most support in the package poll.

## 8. Appendix I: Proposals Not Meeting The Threshold

All proposals that were voted on at the January 2012 MIC meeting passed the 3/2 threshold and are therefore listed above.

## 9. Appendix II: Supplemental Documents

Links to other important documents accompanying this report are provided here for reference:

[Overview of Residual Zone Pricing and Drivers for Implementation](#)

[Summary of 5 packages and remainder of residual zone pricing business rules](#)

[Residual Zone Pricing Options Poll and Results](#)

[Residual Zone Pricing Package Poll and Results](#)

Tariff and Operating Agreement Revisions – see file posted under 1/26/2012 MRC materials

Manual revisions will be presented at upcoming MIC and MRC meetings

## 10. Appendix III: Stakeholder Participation

MIC members who participated at the meeting where the final vetting of options/alternatives was completed, and those members who regularly participated at group meetings are listed below.

Attendees at the January 11, 2012 MIC meeting were as follows:

Last Name	First Name	Company Name	Sector
Ainspan	Malcolm	Energy Curtailment Specialists, Inc.	Other Supplier
Bainbridge	Tom	FirstEnergy Solutions Corp.	Transmission Owner
Barker	Jason	Constellation Energy Commodities Group, Inc.	Transmission Owner
Bassett	Jeffrey	BP Energy Company	Other Supplier
batta	mike	Virginia Electric & Power Company	Transmission Owner
Bearden	Joel	Cargill Power Markets LLC	Other Supplier
Benchek	Jim	Monongahela Power Company d/b/a Allegheny Power	Transmission Owner
Berlinski	Mike	Beacon Power Corporation	Other Supplier
Bleiweis	Bruce	DC Energy LLC	Other Supplier
Bloom	David	Baltimore Gas and Electric Company	Transmission Owner
Bolan	Martin	FirstEnergy Solutions Corp.	Transmission Owner
Bowring	Joseph	Monitoring Analytics, LLC	Not Applicable
Breidenbaugh	Aaron	EnerNOC, Inc.	Other Supplier





Brodbeck	John	Shell Energy North America (US), LP	Other Supplier
Burner	Bob	Duke Energy Carolinas, LLC	Generation Owner
Campbell	Bruce	EnergyConnect Group, Inc.	Other Supplier
Canter	David	Appalachian Power Company	Transmission Owner
Carretta	Kenneth	PSEG Energy Resources and Trade LLC	Transmission Owner
Citrolo	John	Calpine Energy Services, L.P.	Generation Owner
Coulbeck	Rob	ENBALA Power Networks Inc.	Other Supplier
Cox	Jason	Dynegy Power Marketing, LLC	Generation Owner
Crystle	Gil	UGI Development Company	Generation Owner
Danis	Deral	Clean Line Energy Partners	Not Applicable
De Geeter	Ralph	PSC of Maryland	Not Applicable
Decker	Jamie	Gridway Energy Partners, Inc.	Not Applicable
DeNavas	Joe	Potomac Electric Power Company	Electric Distributor
Drom	Rick	Andrews Kurth LLP	Not Applicable
Dugan	William	Monitoring Analytics	Not Applicable
Dunlap	Kevin	Ventyx	Not Applicable
Ellis	Jeff	Edison Mission Marketing and Trading, Inc.	Generation Owner
Erbrick	Michael	EDF Trading North America, LLC	Other Supplier
Erickson	David	AEP Appalachian Transmission Company, Inc.	Generation Owner
Esposito	Pat	NRG Power Marketing, L.L.C.	Generation Owner
Evergam	Scott	FERC	Not Applicable
Fernandes	John	Baltimore Gas and Electric Company	Transmission Owner
Fernandez	Jonathan	Federal Energy Regulatory Commission	Not Applicable
Filomena	Guy	Customized Energy Solutions, Ltd.*	Not Applicable
Fitch	Neal	GenOn Energy Management, LLC	Generation Owner
Flaherty	Dale	Duquesne Light Company	Transmission Owner
Fondacci	Luis	North Carolina Electric Membership Corporation	Electric Distributor
francis	franklin	Brookfield Energy Marketing LP	Other Supplier
Freeman	Al	Michigan Public Service Commission	Not Applicable
Fuess	Jay	PBF Power Marketing LLC	Generation Owner
Galicia	Louis	Ventyx	Other Supplier
Garbini	Marj	Potomac Electric Power Company	Electric Distributor
Gates	Ken	Atlantic Grid Operations A, LLC	Other Supplier
Gilani	Rehan	ConEdison Energy, Inc.	Other Supplier
Gockley	Beatrice	EnergyConnect Group, Inc.	Other Supplier
Greening	Michele	PPL Energy Plus, LLC	Transmission Owner
Guerry	Katie	Hess Corporation	Other Supplier
Halper	Kristin	BP Energy Company	Not Applicable
Hanson	Mark	Illinois Commerce Commission	Not Applicable
Hastings	David	DHastCo, LLC	Not Applicable
Hebert	Damase	Covanta Energy Group, Inc.	Generation Owner
Heizer	Fred	Ohio Public Utilities Commission	Not Applicable
Hoatson	Tom	Riverside Generating, LLC	Generation Owner
Horstmann	John	Dayton Power & Light Company (The)	Transmission Owner
Howley	Rachel	Hess Corporation	Not Applicable
Hubbard	Lance	Allegheny Electric Cooperative, Inc.	Transmission Owner





Huntoon	Stephen	NextEra Energy Power Marketing, LLC	Generation Owner
Hurwich	Mark	Elliott Bay Energy Trading, LLC	Other Supplier
Hyzinski	Tom	PPL Energy Plus, LLC	Transmission Owner
Jablonski	James	Borough of Pemberton	Electric Distributor
Jeremko	Steven	New York State Electric & Gas Corporation	Other Supplier
Jett	W	Duke Energy Business Services LLC	Transmission Owner
Johnson	Carl	Long Island Lighting Company dba LIPA	Other Supplier
Keefer	Brian	Dominion Energy Marketing, Inc.	Generation Owner
Kimmel	Elizabeth	Kimmel Energy Associates*	Other Supplier
Kingston	Amber	Wabash Valley Power Association, Inc.	Not Applicable
Kotras	Craig	Baltimore Gas and Electric Company	Electric Distributor
Koval	Amy	Ameren Energy Marketing Company	Other Supplier
Krajnik	Greg	Viridity Energy, Inc.	Other Supplier
Krauthamer	Michael	Maryland PSC	Not Applicable
Kremer	Kathleen	Commonwealth Edison Company	Transmission Owner
Kuhn	Tyler	DC Energy LLC	Other Supplier
LaFalce	Michael	PSEG Energy Resources and Trade LLC	Transmission Owner
Lee	G	BJ Energy, LLC	Other Supplier
Levine	Jeffrey	GDF SUEZ Energy Marketing NA, Inc.	Other Supplier
Liao	Huaiwei	Louis Dreyfus Energy Services, L.P.	Other Supplier
Lieberman	Steven	Old Dominion Electric Cooperative	Electric Distributor
Lindeman	Tony	FirstEnergy Solutions Corp.	Transmission Owner
Logan	Sharon	FERC	Not Applicable
Mabry	David	McNees Wallace	Not Applicable
Marchand	Michael	Energy America, LLC	Other Supplier
Mariam	Yohannes	Office of the People's Counsel for the District of Columbia	Not Applicable
Marinelli	Richard	Public Service Electric & Gas Company	Transmission Owner
Martin	Beth	Wisconsin Electric Power Company d/b/a WE Power Company	Generation Owner
Martin	Valerie	Federal Energy Regulatory Commission	Not Applicable
Marton	Dave	FirstEnergy Solutions Corp.	Transmission Owner
Maucher	Andrea	Division of the Public Advocate of the State of Delaware	End Use Customer
Maye	Shelly-Ann	North America Power Partners LLC	Other Supplier
Mcdonald	Steve	Customized Energy Solutions, Ltd.*	Not Applicable
McNamara	Grace	Louis Dreyfus Energy Services, L.P.	Other Supplier
McQueeney	Judith	Beacon Power Corporation	Other Supplier
Meridionale	Kevin	Jersey Central Power & Light Company	Transmission Owner
Merola	Becky	Noble Americas Energy Solutions LLC	Other Supplier
MICHAUD	ROSA	Energy Authority, Inc. (The)	Not Applicable

Miller	Don	FirstEnergy Solutions Corp.	Transmission Owner
Miller	John	Commonwealth Edison Company	Transmission Owner
Minalga	Jason	Invenergy LLC	Generation Owner
Mosier	Kevin	MD Public Service Commission	Not Applicable
Nassar	Elie	Ventyx, an ABB Company	Not Applicable
navitsky	leonard	IBERDROLA RENEWABLES, Inc.	Other Supplier
Norton	Chris	American Municipal Power, Inc.	Generation Owner
O'Connell	Robert	J.P. Morgan Ventures Energy Corporation	Other Supplier
Ondayko	Brock	Appalachian Power Company	Transmission Owner
Pakela	Gregg	DTE Energy Trading, Inc.	Other Supplier
Palcic	Ron	FirstEnergy Solutions Corp.	Generation Owner
Pasupatham	Ram	Exelon Generation Co., LLC	Generation Owner
Plante	Mathieu	H.Q. Energy Services (U.S.), Inc.	Other Supplier
Pratzon	David	Exelon Generation Co., LLC	Transmission Owner
Quinlan	Pamela	Rockland Electric Company	Transmission Owner
Rajan	Abhijit	Virginia Electric & Power Company	Generation Owner
Razze	Scott	Potomac Electric Power Company	Electric Distributor
Renda	Michael	DC Energy LLC	Other Supplier
Renninger	Matt	Energy Curtailment Specialists, Inc.	Other Supplier
Riding	MQ	NAEA Ocean Peaking Power, LLC	Generation Owner
Rismiller	Randy	Illinois Commerce Commission	Not Applicable
Rohrbach	John	Southern Maryland Electric Cooperative, Inc.	Electric Distributor
Ruch	Roger	FirstEnergy Solutions Corp.	Transmission Owner
Sandidge	Clint	Noble Americas Energy Solutions LLC	Other Supplier
Schafer	Anita	Duke Energy Business Services LLC	Not Applicable
Schofield	Bill	Customized Energy Solutions, Ltd.*	Not Applicable
Schum	Alice	Illinois Municipal Electric Agency	Electric Distributor
Scoglietti	Barbara	Tangent Energy Solutions, Inc.	Other Supplier
Seymour	Melissa	IBERDROLA RENEWABLES, Inc.	Generation Owner
Shanker	Roy	H.Q. Energy Services (U.S.), Inc.	Other Supplier
Siegrist	Hal	GenOn Energy Management, LLC	Generation Owner
Sillin	John	Federal Energy Regulatory Commission	Not Applicable
Simms	Chris	Downes Associates, Inc.	Other Supplier
Singh	Harry	J. Aron & Company	Other Supplier
Sprecher	Daniel	VCharge, Inc.	Other Supplier
Stadelmeyer	Rebecca	Exelon Generation Co., LLC	Transmission Owner
Stuchell	Jeff	FirstEnergy Solutions Corp.	Transmission Owner
Summe	Martin	North Carolina Municipal Power Agency Number 1	Other Supplier
Swalwell	Brad	Tangent Energy Solutions, Inc.	Other Supplier
Tackett	Nicholas	FERC	Not Applicable
Tatum	Ed	Old Dominion Electric Cooperative	Electric Distributor
Thompson	Matthew	North America Power Partners LLC	Other Supplier
tigue	john	New York State Electric & Gas Corporation	Other Supplier
Trayers	Barry	Citigroup Energy, Inc.	Other Supplier
Velasco	Cheryl Mae	Viridity Energy, Inc.	Other Supplier



verderame	john	Carolina Power & Light Company	Other Supplier
Wadsworth	Joe	Vitol Inc.	Other Supplier
Whitehead	Jeff	Customized Energy Solutions, Ltd.*	Ex Officio
Williams	Jeff	PJM Interconnection	Not Applicable
Williams	Michael	Black Oak Energy, LLC	Other Supplier
Wolfe	Samuel	Viridity Energy, Inc.	Other Supplier
Xenopoulos	Damon	Brickfield, Burchette, Ritts	Not Applicable
Yu	Haibin	Calpine Energy Services, L.P.	Generation Owner

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