



**Southwest Power Pool
Economic Studies Working Group
May 23, 2018
Webex / Conference Call**

• SUMMARY OF ACTIONS TAKEN •

1. Approved the conventional resource plan units and ownership.

Southwest Power Pool
ECONOMIC STUDIES WORKING GROUP

May 23, 2018

Webex / Conference Call

• MINUTES •

Agenda Item 1 – Administrative Items

Agenda Item 1a - Call to Order, Introductions

Vice-Chair Tim Owens (NPPD) called the meeting of the Economic Studies Working Group (ESWG) to order at 2:30 p.m., welcomed those in attendance, and asked for introductions.

There were 40 web conference participants, representing 13 of 17 ESWG members. (Attachment 1 – May 16, 2018 Attendance List)

Agenda Item 1b – Receipt of Proxies

Tim Owens (NPPD) asked for any proxy statements; four proxies were identified:

- Kurt Stradley (LES) named Tim Owens (NPPD) as his proxy
- Leon Howell (OGE) named Zac Hager (OGE) as his proxy
- Natasha Henderson (GSEC) named Evan Racine-Johnson (GSEC) as her proxy
- John Olsen (Westar) named Jeremy Harris (Westar) as his proxy.

(Attachment 1a – Proxy Statements)

Agenda Item 1c – Review of Agenda

Tim Owens (NPPD) presented the agenda for review and asked for any additions or corrections. It was noted that Resource Planning Phase 2 was not listed as an approval item in the posted agenda. Amber Greb (SPP) reminded the group that during the May 16th face to face meeting, they discussed having a conference call this week for the sole purpose of approving the resource plan. Amber apologized for the confusion and reminded the group that to remain on the schedule that Juliano Freitas (SPP) has been presenting at each meeting, approval is needed during this call. (Attachment 2 – May 23, 2018 ESWG Agenda).

Jon Iverson (OPPD) made a motion; seconded by Anita Sharma (AEP) to adopt the agenda. The motion was approved unanimously.

Agenda Item 1d – Antitrust Reminder

Amber Greb (SPP) provided an antitrust reminder to the group.

Agenda Item 2 – Resource Planning Phase 2

Amber Greb (SPP) began by reminding the group that during the May 16-17th face to face meeting, the ESWG reviewed and discussed phase 2 of the resource plan, members requested an opportunity to request potential changes to the resource plan. During the meeting, a call was set up for May 23rd to discuss any member feedback and to approve the resource plan. Jeremy Harris pointed out that he was given John Olsen's proxy with the intention of listening in and providing information for John to vote at a future meeting. Tim Owens (NPPD) asked if anyone was uncomfortable continuing the resource planning discussion with the intention of requesting a vote. There were no objections. Amber reviewed the resource planning process, inputs, and results. The group discussed the conventional additions and their ownership. Amber explained that the combustion turbine units selected are running at a very small capacity factor in the strategist model (less than 2%), with all the available wind and solar the model is only selecting peaking units for economic reasons. There was discussion on the Lubbock load being included in the model and



how it could affect the resource planning results. SPS said that this load would be out of SPP by 2020. SPP is under a tariff obligation to plan for the load until it has officially left, but Staff is researching how to include a sensitivity during the needs assessment to identify any needs that result from the inclusion of the Lubbock load. (Attachment 3 – Resource Plan Phase 2)

Randy Collier (CUS) made a motion; seconded by Zac Hager (OGE) to approve the conventional resource plan units and ownership. The motion was approved with one abstention. Evan Racine-Johnson (GSEC) abstained.

GSEC Reason for abstention: *“GSEC abstained as we believe that running a sensitivity to address Lubbock’s move out of SPP is neither ideal from a technical nor efficiency standpoint, but necessary given that adequate time was not provided to consider other options. GSEC understands that transmission service is required up until Lubbock leaves SPP, but building economic transmission for periods beyond that move date is impractical. SPP had previously stated that there would be impacts to the APC in the ITP, yet the solution to Lubbock’s move was presented during the same meeting in which they required approval of the resource plan. This in turn gave ESWG Members very limited time to discuss and agree on this one particular solution, so as not to delay the entire ITP timeline. In the future, ESWG Members should be given options much sooner in the process to allow for efficient solutions.”*

Closing Items

There were no action items from the meeting.

The meeting was adjourned at 3:45 PM on May 23rd.

Respectfully Submitted,

Amber Greb

ESWG Secretary

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Tim Owens (NPPD)	tjowens@nppd.com
Tom Hopkins	jmandizha@mwenergy.com
Zac Hager	hagerzc@oge.com

Proxy statements:

Good Afternoon –

Tim Owens will have my proxy vote for the May 23 ESWG Conference Call. I may be on the call from 2:30 until 3:00 but Tim will have my vote for the duration of the meeting.

Kurt Stradley I Engineer III



Alan and Amber,

Please allow Zac Hager my proxy for the 5/23/18 ESWG meeting.

Leon

From: Henderson, Natasha

Sent: Monday, May 21, 2018 12:43 PM

To: Amber Greb <agreb@spp.org>; Myers, Alan <amyers@itctransco.com>

Subject: **External Email** FW: ESWG 5/23/18 Agenda & Background Materials

Evan will have my proxy

From: bounce-62796-94843@spplist.spp.org [<mailto:bounce-62796-94843@spplist.spp.org>] **On Behalf Of** Amber Greb

Sent: Friday, May 18, 2018 1:18 PM

To: Economic Studies Working Group - Created by MSB 5/5/09 <eswg@spplist.spp.org>

Subject: **External Email** ESWG 5/23/18 Agenda & Background Materials

ESWG 5/23/18 Agenda & Background Materials have been posted to the SPP website for your review at the link shown below:

For next week's meeting (whenever it is), Jeremy Harris will have my proxy. I have asked him to respond to the Doodle poll.

Thanks,

John Olsen

Westar Energy, Inc.

Ex. Director, System Operations & Transmission Development

John.Olsen@WestarEnergy.com

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ECONOMIC STUDIES WORKING GROUP MEETING

May 23rd, 2018

Conference Call

• A G E N D A •

1. Administrative Items
 - a. Call to Order, Introductions..... Alan Myers (5 minutes)
 - b. Receipt of Proxies Amber Greb (1 minute)
 - c. Review of Agenda¹ Alan Myers (1 minute)
 - d. Antitrust Reminder Amber Greb (1 minute)
2. Resource Planning Phase 2¹ (Approval Item) Amber Greb (150 minutes)
3. Closing Items All (5 minutes)
 - a. Summary of Action Items (Amber Greb)
 - b. Future Meetings
 - i. May 31st: Conference Call
 - ii. June 14th, 2018: 41st floor AEP Office, Dallas Texas
 - iii. July 26th, 2018: 2CC Milan-ITC Office, 27175 Energy Way, Novi, Michigan
 - iv. August 15-16th, 2018: Doubletree-Grand Ballrm A, 27 North 27th St., Billings, MT
 - v. September 13th, 2018: 41st floor AEP Office, Dallas Texas
 - vi. October 11th, 2018: 41st floor AEP Office, Dallas Texas
 - vii. November 14-15th, 2018: SPP Offices, Little Rock, AR
 - viii. December 3rd, 2018: 41st floor AEP Office, Dallas Texas

¹ Background Material Included

Antitrust: SPP strictly prohibits use of participation in SPP activities as a forum for engaging in practices or communications that violate the antitrust laws. Please avoid discussion of topics or behavior that would result in anti-competitive behavior, including but not limited to, agreements between or among competitors regarding prices, bid and offer practices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that might unreasonably restrain competition.



HELPING OUR MEMBERS WORK TOGETHER
TO KEEP THE LIGHTS ON... TODAY AND IN THE FUTURE.

ITP Resource Planning Phase II

Amber Greb

May 23th, 2018

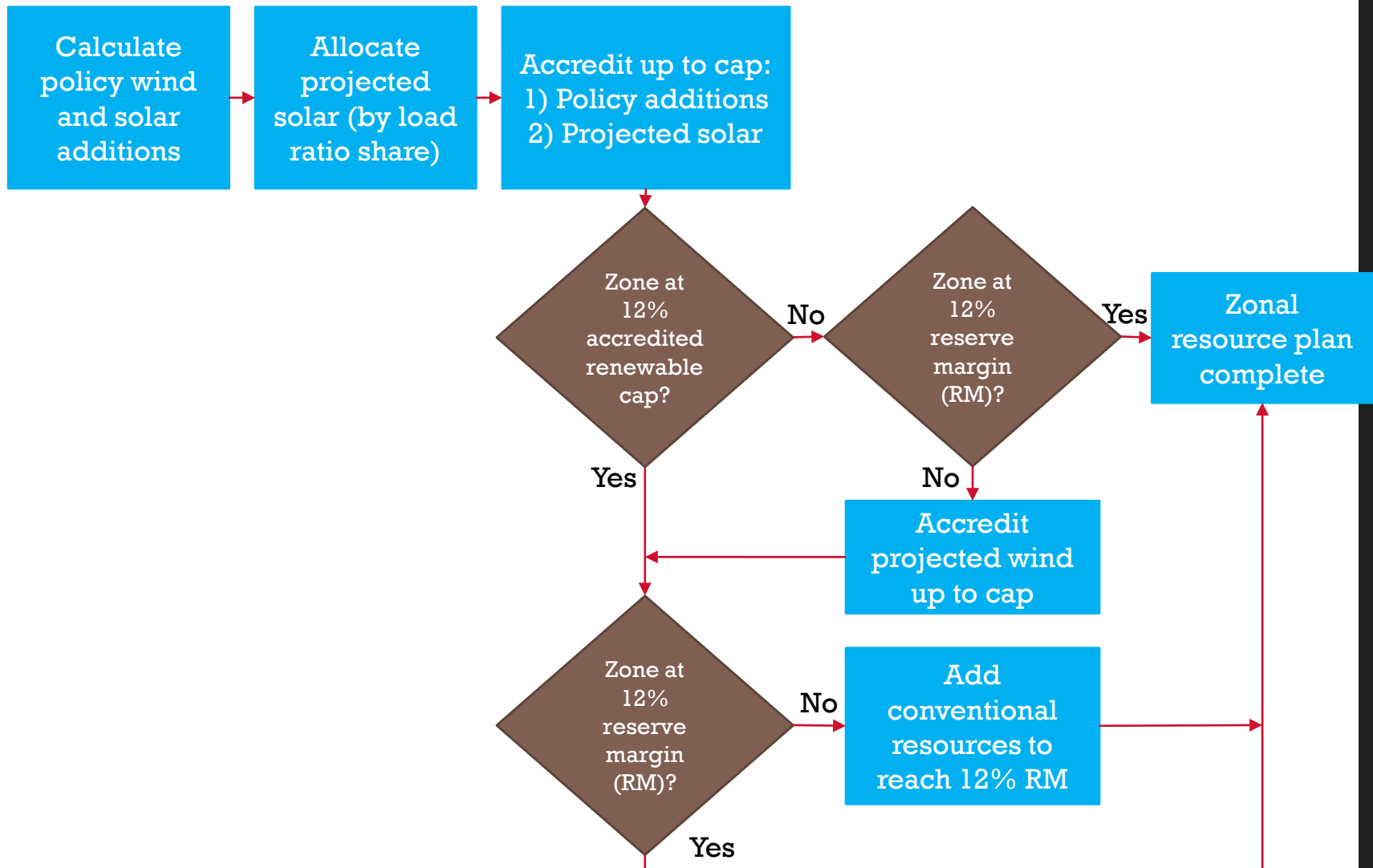
Objective

- Review Allocation of conventional resources
- Discuss concerns/Stakeholder proposals
- Approve the 2019 ITP Resource Plan

Inputs

- **Model inputs**
 - Load and generation review
 - RPI renewable units
 - Projected wind and solar units
- **Constraints**
 - Zonal load requirements and generation capacity
 - Zonal renewable additions cap (12% of load)
 - Zonal reserve margin requirement (12%)

Resource Planning Decision Tree



Inputs

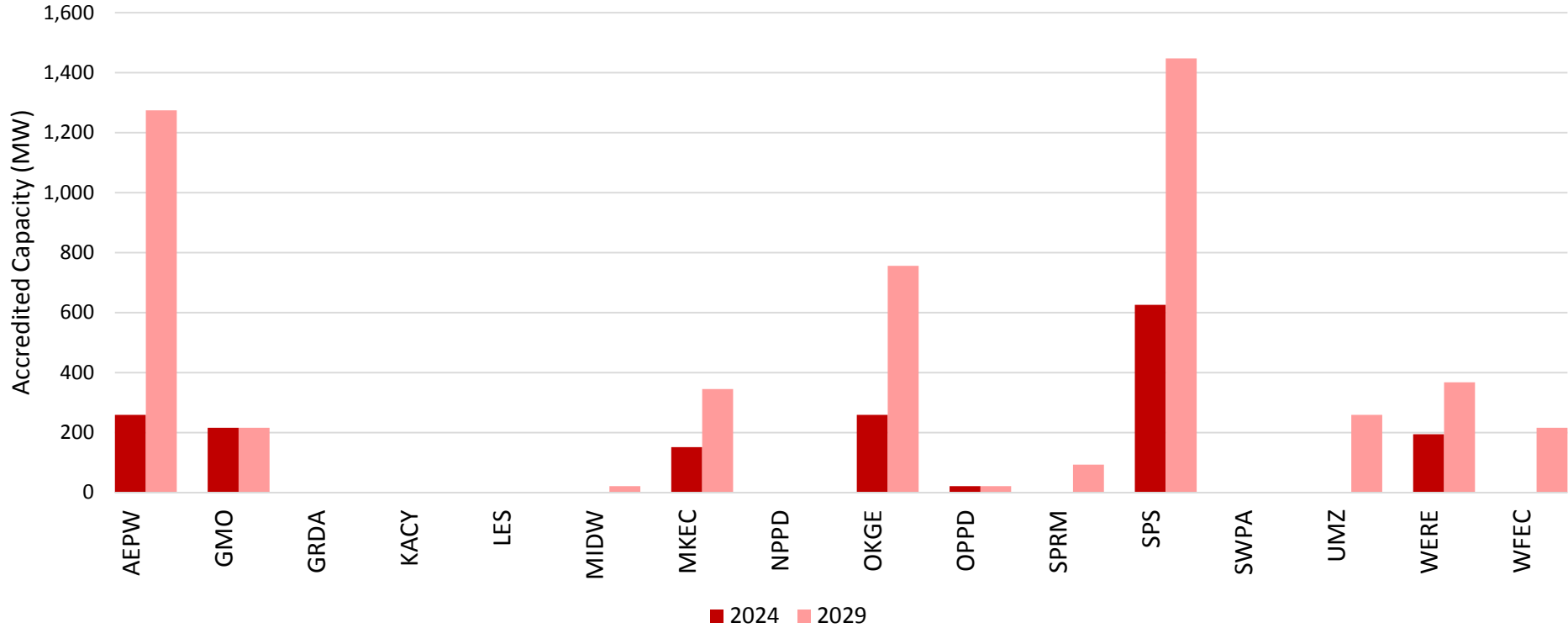
- Renewables

Incremental Additions	2021	Future 1: Reference Case		Future 2: Emerging Technologies	
		2024	2029	2024	2029
Solar (MW)	0	2,767	4,767	4,067	7,267
Wind (MW)	0	5,868	6,868	9,868	12,868

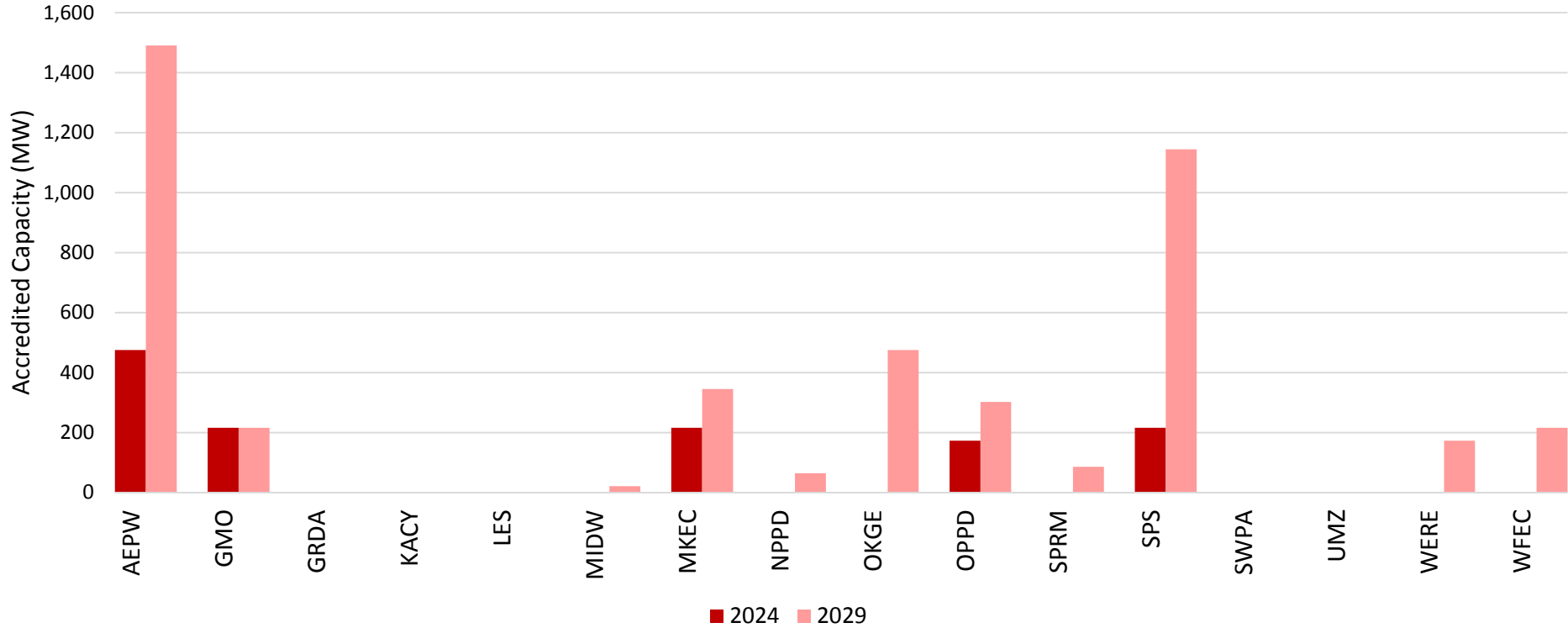
Conventional Prototypes

GENERATION TYPE	SIZE (MW)	TOTAL CAPITAL COST (\$/KW)	VARIABLE O&M (\$/MWH)	FIXED O&M (\$/KW-YR)	HEAT RATE (BTU/KWH)
Combined Cycle	550	1,333	2.05	5.64	6,900
Combustion Turbine	216	820	4.82	5.13	10,300
Reciprocating Engine	50	897	12.82	17.94	8,500

Future 1 Conventional Additions by Zone



Future 2 Conventional Additions by Zone



Regional Conventional Units Added

	Future 1			Future 2		
	CC	CT	RE	CC	CT	RE
2024	0	8	0	0	6	0
2029	0	15	1	0	15	0
Total	0	23	1	0	21	0

Accumulative Conventional Capacity Additions (MW)

Zone	F1 2024				F1 2029				F2 2024				F2 2029			
	CC	CT	RE	Total	CC	CT	RE	Total	CC	CT	RE	Total	CC	CT	RE	Total
AEPW	0	259	0	259	0	1274	0	1274	0	475	0	475	0	1490	0	1490
EMDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GMO	0	216	0	216	0	216	0	216	0	216	0	216	0	216	0	216
GRDA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KACY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KCPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIDW	0	0	0	0	0	43	0	43	0	0	0	0	0	22	0	22
MKEC	0	151	0	151	0	346	0	346	0	216	0	216	0	346	0	346
NPPD	0	0	0	0	0	0	0	0	0	0	0	0	0	65	0	65
OKGE	0	259	0	259	0	756	0	756	0	0	0	0	0	475	0	475
OPPD	0	22	0	22	0	22	0	22	0	173	0	173	0	302	0	302
SPRM	0	0	0	0	0	86	0	86	0	0	0	0	0	86	0	86
SPS	0	626	0	626	0	1447	0	1447	0	216	0	216	0	1145	0	1145
SUNC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMZ	0	0	0	0	0	216	50	266	0	0	0	0	0	0	0	0
WERE	0	194	0	194	0	367	0	367	0	0	0	0	0	173	0	173
WFEC	0	0	0	0	0	216	0	216	0	0	0	0	0	216	0	216
Sum	0	1728	0	1728	0	4990	50	5040	0	1296	0	1296	0	4536	0	4536

Future 1 Conventional Additions Ownership

Unit	Zone	Cap (MW)	Study Year In-Service	Owner 1 (Siting Zone)	Owner 1 % share	Owner 2	Owner 2 % share	Owner 3	Owner 3 % share
CT #1	AEPW	216	2024	AEPW	100%				
CT #2	OKGE	216	2024	OKGE	100%				
CT #3	SPS	216	2024	SPS	100%				
CT #4	SPS	216	2024	SPS	100%				
CT #5	SPS	216	2024	SPS	90%	AEPW	10%		
CT #6	GMO	216	2024	GMO	100%				
CT #7	MKEC	216	2024	MKEC	70%	OKGE	20%	AEPW	10%
CT #8	WERE	216	2024	WERE	90%	OPPD	10%		
CT #9	AEPW	216	2029	AEPW	100%				
CT #10	AEPW	216	2029	AEPW	100%				
CT #11	AEPW	216	2029	AEPW	100%				
CT #12	AEPW	216	2029	AEPW	100%				
CT #13	AEPW	216	2029	AEPW	70%	OKGE	30%		
CT #14	OKGE	216	2029	OKGE	100%				
CT #15	OKGE	216	2029	OKGE	100%				
CT #16	SPS	216	2029	SPS	100%				
CT #17	SPS	216	2029	SPS	100%				
CT #18	SPS	216	2029	SPS	100%				
CT #19	SPS	216	2029	SPS	80%	MIDW	20%		
CT #20	WFEC	216	2029	WFEC	100%				
CT #21	MKEC	216	2029	MKEC	80%	SPRM	20%		
CT #22	WERE	216	2029	WERE	80%	SPRM	20%		
CT #23	UMZ	216	2029	UMZ	100%				
Recip #1	UMZ	50	2029	UMZ	100%				

Future 2 Conventional Additions Ownership

Unit	Zone	Cap (MW)	Study Year In-Service	Owner 1 (Siting Zone)	Owner 1 % share	Owner 2	Owner 2 % share	Owner 3	Owner 3 % share
CT #1	AEPW	216	2024	AEPW	100%				
CT #2	AEPW	216	2024	AEPW	100%				
CT #3	SPS	216	2024	SPS	100%				
CT #4	GMO	216	2024	GMO	100%				
CT #5	MKEC	216	2024	MKEC	100%				
CT #6	OPPD	216	2024	OPPD	80%	AEPW	20%		
CT #7	AEPW	216	2029	AEPW	100%				
CT #8	AEPW	216	2029	AEPW	100%				
CT #9	AEPW	216	2029	AEPW	100%				
CT #10	AEPW	216	2029	AEPW	100%				
CT #11	AEPW	216	2029	AEPW	70%	OKGE	20%	SPRM	10%
CT #12	OKGE	216	2029	OKGE	100%				
CT #13	OKGE	216	2029	OKGE	100%				
CT #14	SPS	216	2029	SPS	100%				
CT #15	SPS	216	2029	SPS	100%				
CT #16	SPS	216	2029	SPS	100%				
CT #17	SPS	216	2029	SPS	100%				
CT #18	WFEC	216	2029	WFEC	100%				
CT #19	WERE	216	2029	WERE	80%	SPRM	20%		
CT #20	OPPD	216	2029	OPPD	60%	NPPD	30%	SPRM	10%
CT #21	MKEC	216	2029	MKEC	60%	SPS	30%	MIDW	10%

Next Steps

- Approve Resource Plan
- Feeds into Siting Plan

Appendix

Future 1 2021 Accredited Capacity (MW)

Zone	Existing Conventional	Existing Solar	Existing Wind	Existing DC Ties & PPAs	New Solar	New Wind	Total Existing + New	Summer Peak Demand	PPA Obligations	Summer Load Obligation	Summer Load Obligation + 12% Reserve Margin	Capacity Shortfall Post-Renewable Allocation	New Conventional
AEPW	11,170	0	298	659	0	0	12,127	10,596	(11)	10,585	11,855	0	0
EMDE	1,563	0	13	0	0	0	1,575	1,156	(3)	1,153	1,291	0	0
GMO	1,498	0	78	0	0	0	1,576	1,825	0	1,825	2,044	467	0
GRDA	2,157	0	19	(458)	0	0	1,718	1,180	0	1,180	1,321	0	0
KACY	672	0	12	39	0	0	724	522	0	522	585	0	0
KCPL	4,453	0	301	55	0	0	4,808	3,727	(11)	3,716	4,162	0	0
LES	848	0	18	0	0	0	865	785	(128)	657	736	0	0
MIDW	296	0	2	155	0	0	453	437	(11)	425	476	23	0
MKEC	587	0	7	(11)	0	0	583	730	(124)	606	679	96	0
NPPD	3,699	0	64	(24)	0	0	3,739	3,903	(617)	3,286	3,680	0	0
OKGE	7,049	0	121	477	0	0	7,647	6,767	41	6,807	7,624	0	0
OPPD	2,581	0	135	(20)	0	0	2,696	2,507	(105)	2,402	2,690	0	0
SPRM	811	0	19	55	0	0	885	721	54	775	868	0	0
SPS	6,514	39	250	355	0	0	7,159	6,847	11	6,858	7,681	522	0
SUNC	646	0	2	0	0	0	648	601	(4)	597	668	20	0
SWPA	2,740	0	0	(1,593)	0	0	1,148	681	(125)	556	623	0	0
UMZ	6,876	0	77	277	0	0	7,230	5,001	1,300	6,301	7,057	0	0
WERE	5,951	0	209	9	0	0	6,168	5,726	118	5,844	6,545	377	0
WFEC	1,622	1	68	330	0	0	2,021	1,877	20	1,897	2,125	104	0

*Peak demand and load obligation shown includes losses

Future 1 2024 Accredited Capacity (MW)

Zone	Existing Conventional	Existing Solar	Existing Wind	Existing DC Ties & PPAs	New Solar	New Wind	Total Existing + New	Summer Peak Demand	PPA Obligations	Summer Load Obligation	Summer Load Obligation + 12% Reserve Margin	Capacity Shortfall Post-Renewable Allocation	New Conventional
AEPW	10,252	0	298	665	362	158	11,735	10,703	(11)	10,692	11,975	241	259
EMDE	1,563	0	13	0	40	0	1,615	1,169	(3)	1,166	1,306	0	0
GMO	1,490	0	78	0	59	152	1,780	1,758	0	1,758	1,969	189	216
GRDA	2,157	0	19	(458)	44	0	1,762	1,293	0	1,293	1,448	0	0
KACY	672	0	12	39	18	0	741	527	0	527	590	0	0
KCPL	4,453	0	301	55	118	0	4,926	3,495	(11)	3,484	3,902	0	0
LES	848	0	18	0	27	0	892	802	(128)	674	755	0	0
MIDW	296	0	2	155	15	18	486	446	(12)	434	486	0	0
MKEC	427	0	7	25	24	49	532	714	(105)	610	683	151	151
NPPD	3,709	0	64	(24)	134	0	3,883	3,962	(619)	3,343	3,744	0	0
OKGE	6,516	0	121	487	233	158	7,514	6,889	40	6,929	7,761	247	259
OPPD	2,290	0	135	(20)	84	158	2,647	2,487	(105)	2,382	2,667	21	22
SPRM	811	0	19	55	24	0	909	719	55	775	868	0	0
SPS	6,187	39	250	355	252	158	7,242	7,014	11	7,025	7,868	626	626
SUNC	646	0	2	0	27	7	682	608	(4)	604	677	0	0
SWPA	2,740	0	0	(1,593)	24	0	1,171	696	(126)	571	639	0	0
UMZ	6,859	0	77	277	175	0	7,388	5,186	1,300	6,486	7,264	0	0
WERE	5,940	0	209	9	211	173	6,541	5,875	135	6,010	6,731	189	194
WFEC	1,572	1	68	330	65	144	2,180	1,926	20	1,946	2,180	0	0

*Peak demand and load obligation shown includes losses

Future 1 2029 Accredited Capacity (MW)

Zone	Existing Conventional	Existing Solar	Existing Wind	Existing DC Ties & PPAs	New Solar	New Wind	Total Existing + New	Summer Peak Demand	PPA Obligations	Summer Load Obligation	Summer Load Obligation + 12% Reserve Margin	Capacity Shortfall Post-Renewable Allocation	New Conventional
AEPW	9,515	0	257	646	631	174	11,223	11,121	(11)	11,110	12,443	1,220	1,274
EMDE	1,471	0	8	0	74	7	1,559	1,193	(4)	1,189	1,331	0	0
GMO	1,490	0	78	0	100	112	1,781	1,767	0	1,767	1,979	199	216
GRDA	2,157	0	19	(458)	73	0	1,792	1,294	0	1,294	1,449	0	0
KACY	599	0	12	39	30	0	681	535	0	535	599	0	0
KCPL	4,402	0	301	55	198	0	4,955	3,485	(13)	3,472	3,889	0	0
LES	848	0	18	0	47	0	912	825	(128)	697	781	0	0
MIDW	294	0	2	155	27	28	506	470	(12)	458	513	6	43
MKEC	267	0	7	25	41	33	373	727	(110)	617	691	317	346
NPPD	3,696	0	64	(24)	230	0	3,966	4,054	(622)	3,432	3,844	0	0
OKGE	6,044	0	121	502	402	174	7,243	7,083	44	7,127	7,982	739	756
OPPD	2,290	0	135	(20)	141	117	2,663	2,482	(105)	2,377	2,663	0	22
SPRM	627	0	19	55	41	53	794	717	60	777	870	76	86
SPS	5,573	39	250	355	434	174	6,826	7,338	11	7,349	8,231	1,405	1,447
SUNC	646	0	2	0	42	8	699	628	(4)	624	699	0	0
SWPA	2,740	0	0	(1,593)	41	0	1,189	727	(134)	592	663	0	0
UMZ	6,503	0	77	277	311	174	7,342	5,487	1,300	6,787	7,602	259	266
WERE	5,867	0	209	9	359	189	6,633	6,096	143	6,239	6,988	355	367
WFEC	1,440	1	68	330	114	130	2,084	2,018	20	2,038	2,283	199	216

*Peak demand and load obligation shown includes losses

Future 2 2024 Accredited Capacity (MW)

Zone	Existing Conventional	Existing Solar	Existing Wind	Existing DC Ties & PPAs	New Solar	New Wind	Total Existing + New	Summer Peak Demand	PPA Obligations	Summer Load Obligation	Summer Load Obligation + 12% Reserve Margin	Capacity Shortfall Post-Renewable Allocation	New Conventional
AEPW	9,558	0	298	665	535	475	11,530	10,703	(11)	10,692	11,975	445	475
EMDE	1,563	0	13	0	58	0	1,634	1,169	(3)	1,166	1,306	0	0
GMO	1,490	0	78	0	88	123	1,780	1,758	0	1,758	1,969	189	216
GRDA	2,157	0	19	(458)	65	0	1,783	1,293	0	1,293	1,448	0	0
KACY	672	0	12	39	26	0	750	527	0	527	590	0	0
KCPL	4,453	0	301	55	175	0	4,983	3,495	(11)	3,484	3,902	0	0
LES	848	0	18	0	40	0	905	802	(128)	674	755	0	0
MIDW	296	0	2	155	22	11	486	446	(12)	434	486	0	0
MKEC	427	0	7	25	36	37	532	714	(105)	610	683	151	216
NPPD	3,495	0	64	(24)	198	11	3,744	3,962	(619)	3,343	3,744	0	0
OKGE	6,516	0	121	487	344	293	7,761	6,889	40	6,929	7,761	0	0
OPPD	2,142	0	135	(20)	124	162	2,543	2,487	(105)	2,382	2,667	125	173
SPRM	811	0	19	55	36	0	921	719	55	775	868	0	0
SPS	6,187	39	250	355	366	475	7,673	7,014	11	7,025	7,868	196	216
SUNC	646	0	2	0	37	7	692	608	(4)	604	677	0	0
SWPA	2,740	0	0	(1,593)	35	0	1,183	696	(126)	571	639	0	0
UMZ	6,859	0	77	277	259	0	7,472	5,186	1,300	6,486	7,264	0	0
WERE	5,940	0	209	9	306	267	6,731	5,875	135	6,010	6,731	0	0
WFEC	1,572	1	68	330	96	112	2,180	1,926	20	1,946	2,180	0	0

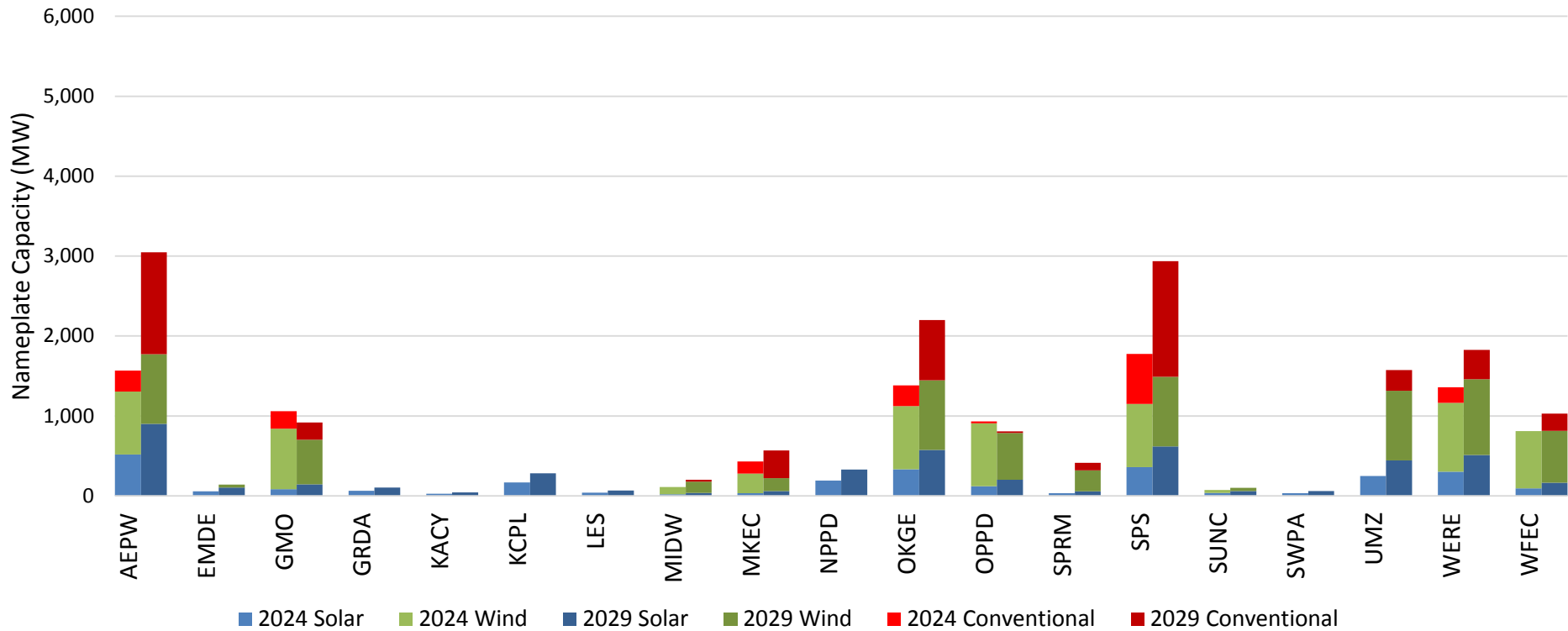
*Peak demand and load obligation shown includes losses

Future 2 2029 Accredited Capacity (MW)

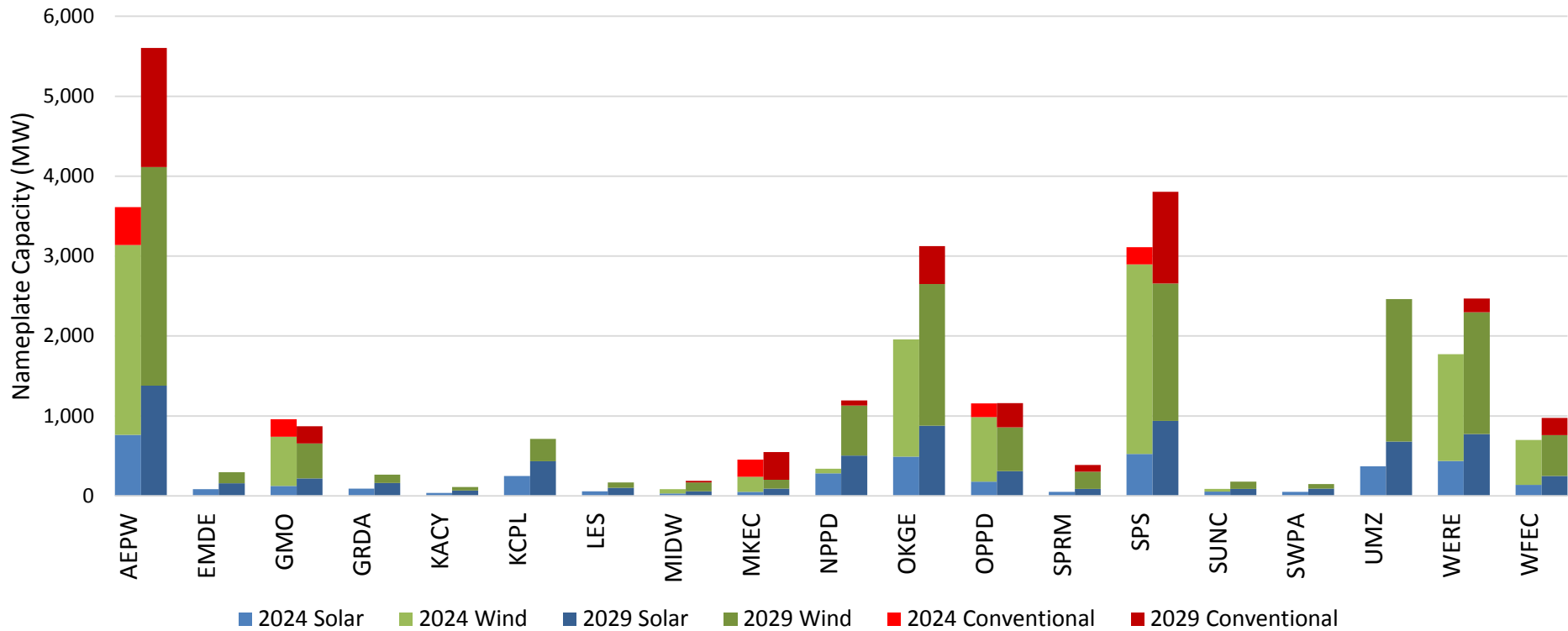
Zone	Existing Conventional	Existing Solar	Existing Wind	Existing DC Ties & PPAs	New Solar	New Wind	Total Existing + New	Summer Peak Demand	PPA Obligations	Summer Load Obligation	Summer Load Obligation + 12% Reserve Margin	Capacity Shortfall Post-Renewable Allocation	New Conventional
AEPW	8,728	0	257	646	966	367	10,964	11,121	(11)	11,110	12,443	1,479	1,490
EMDE	1,471	0	8	0	111	8	1,597	1,193	(4)	1,189	1,331	0	0
GMO	1,490	0	78	0	153	59	1,781	1,767	0	1,767	1,979	199	216
GRDA	2,157	0	19	(458)	112	0	1,831	1,294	0	1,294	1,449	0	0
KACY	599	0	12	39	46	0	697	535	0	535	599	0	0
KCPL	3,838	0	301	55	303	0	4,496	3,485	(13)	3,472	3,889	0	0
LES	848	0	18	0	72	0	937	825	(128)	697	781	0	0
MIDW	294	0	2	155	41	14	506	470	(12)	458	513	6	22
MKEC	267	0	7	25	63	11	373	727	(110)	617	691	317	346
NPPD	3,332	0	64	(24)	352	60	3,784	4,054	(622)	3,432	3,844	61	65
OKGE	6,044	0	121	502	615	240	7,523	7,083	44	7,127	7,982	460	475
OPPD	1,967	0	135	(20)	216	70	2,367	2,482	(105)	2,377	2,663	296	302
SPRM	627	0	19	55	62	31	794	717	60	777	870	76	86
SPS	5,573	39	250	355	656	226	7,100	7,338	11	7,349	8,231	1,131	1,145
SUNC	646	0	2	0	61	8	717	628	(4)	624	699	0	0
SWPA	2,740	0	0	(1,593)	63	0	1,211	727	(134)	592	663	0	0
UMZ	6,503	0	77	277	476	268	7,602	5,487	1,300	6,787	7,602	0	0
WERE	5,867	0	209	9	543	206	6,833	6,096	143	6,239	6,988	155	173
WFEC	1,440	1	68	330	175	69	2,084	2,018	20	2,038	2,283	199	216

*Peak demand and load obligation shown includes losses

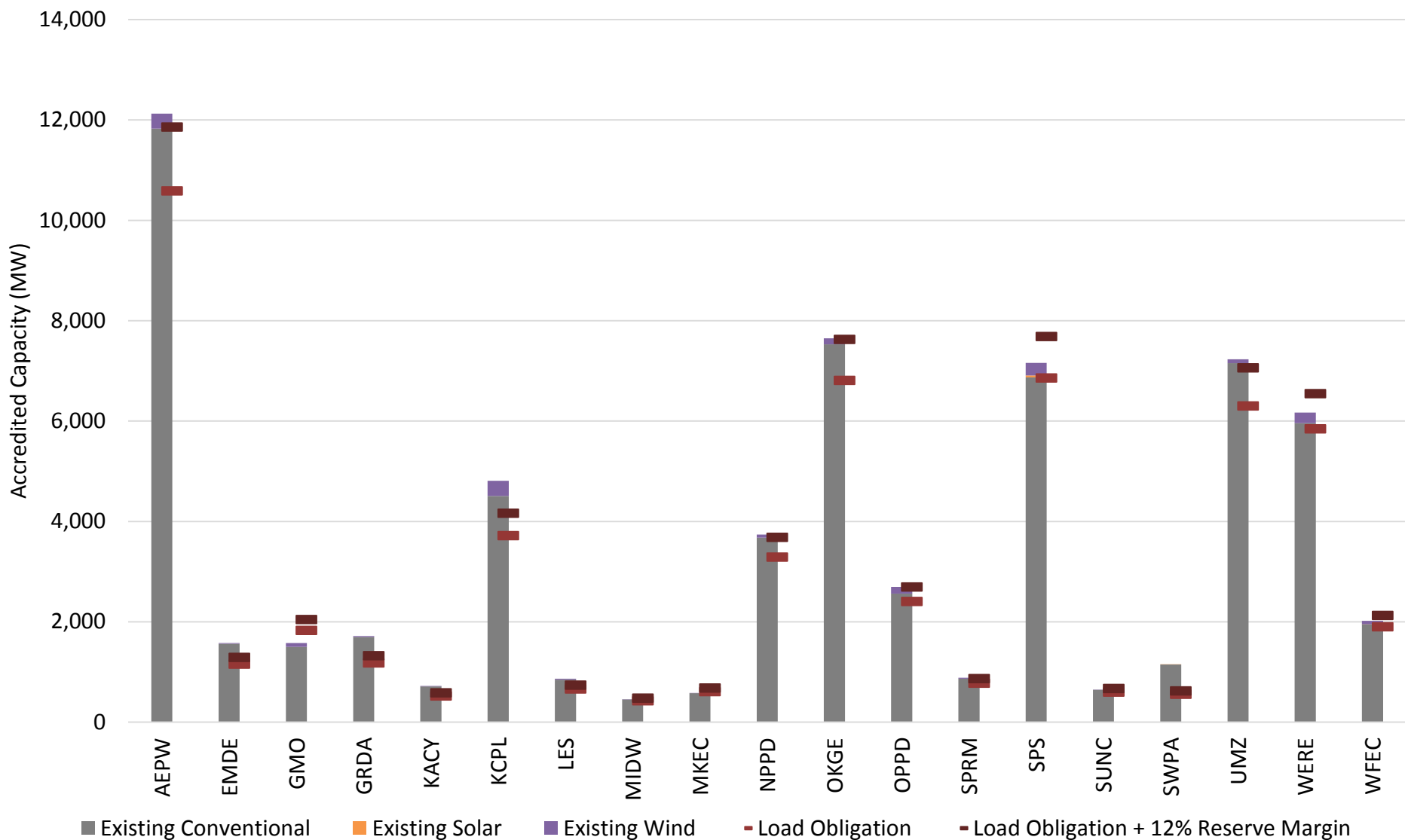
Future 1 Nameplate Additions



Future 2 Nameplate Additions

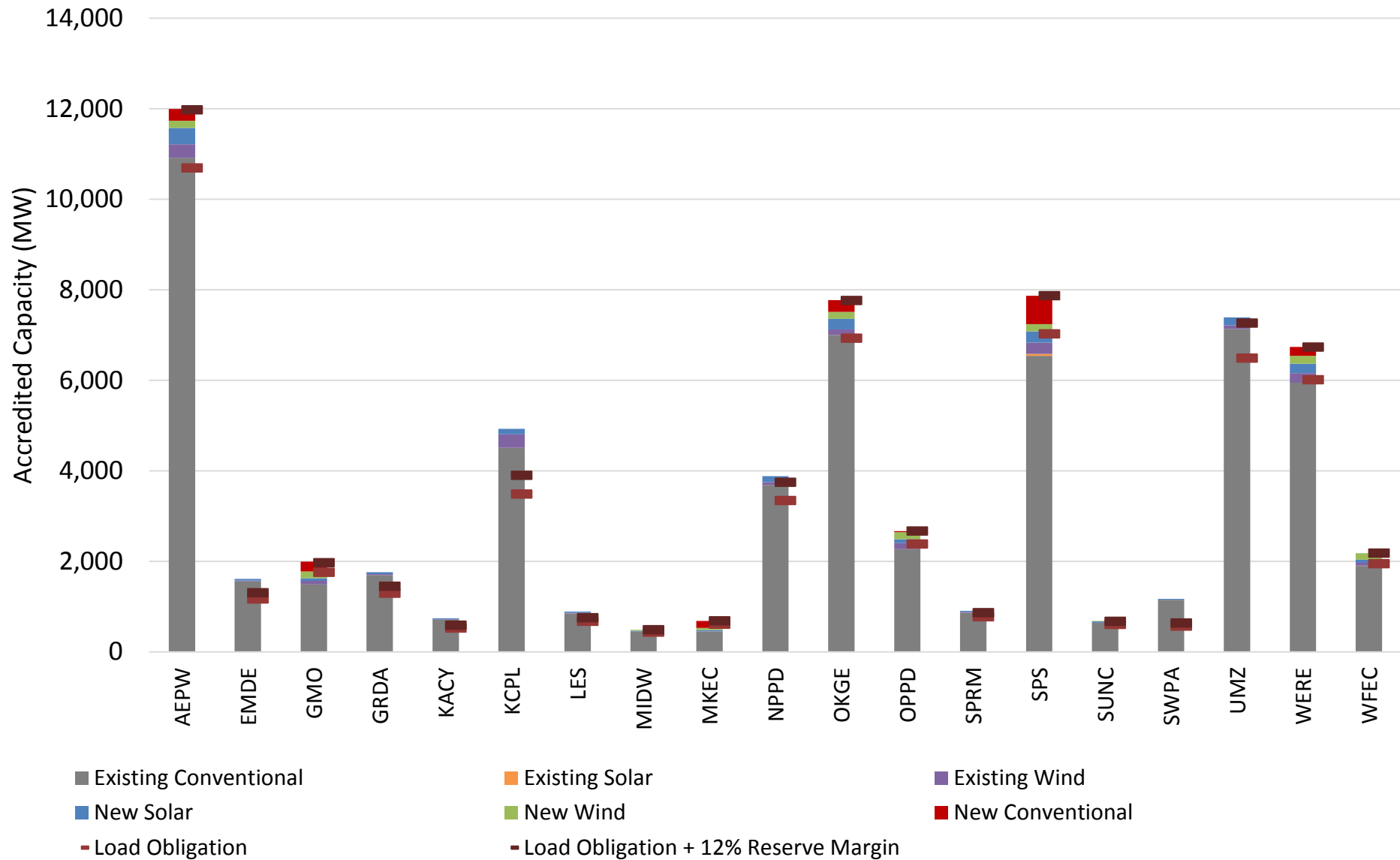


Future 1 Resource Adequacy By Zone - 2021



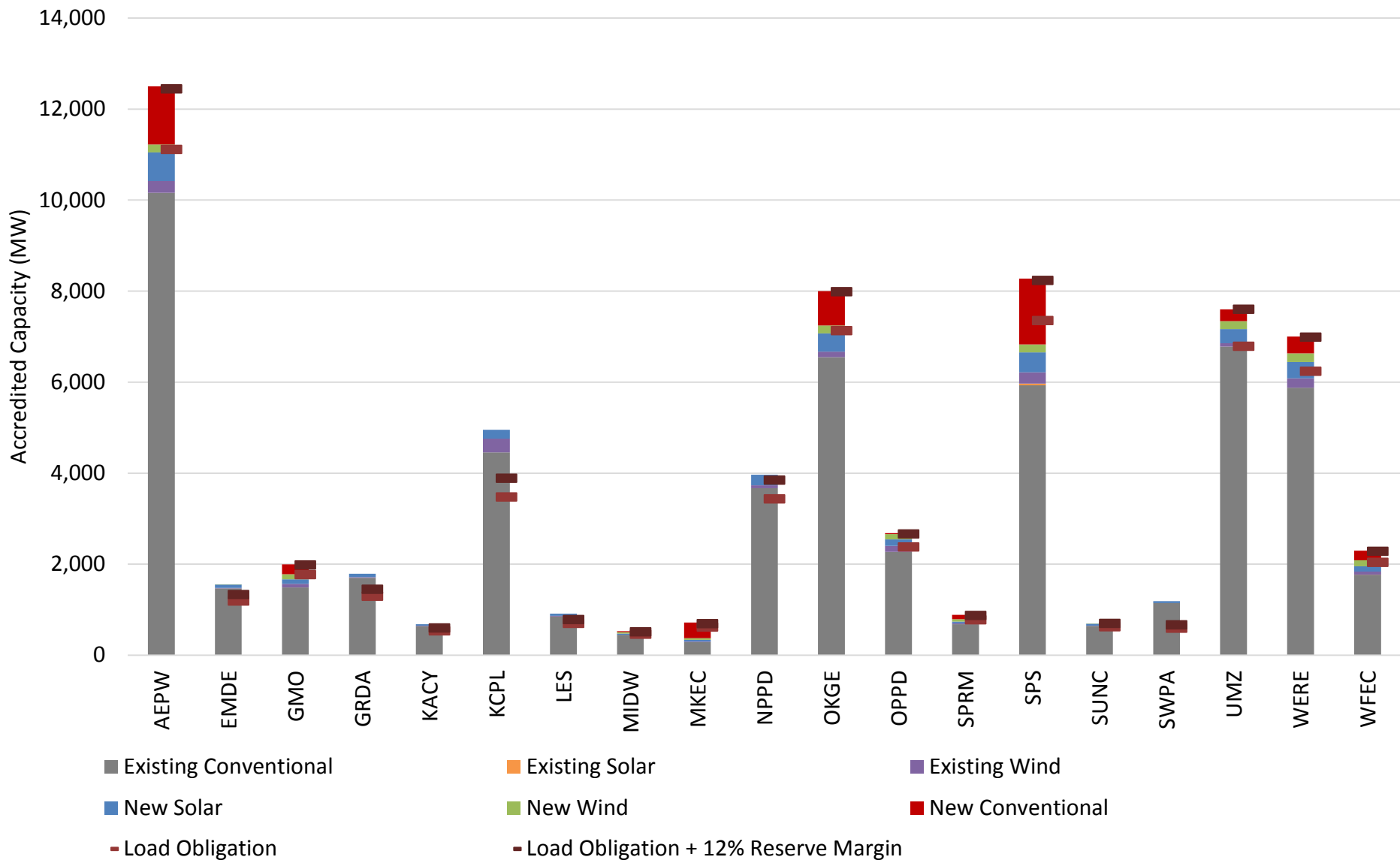
*Load obligation shown includes losses

Future 1 Resource Adequacy By Zone - 2024



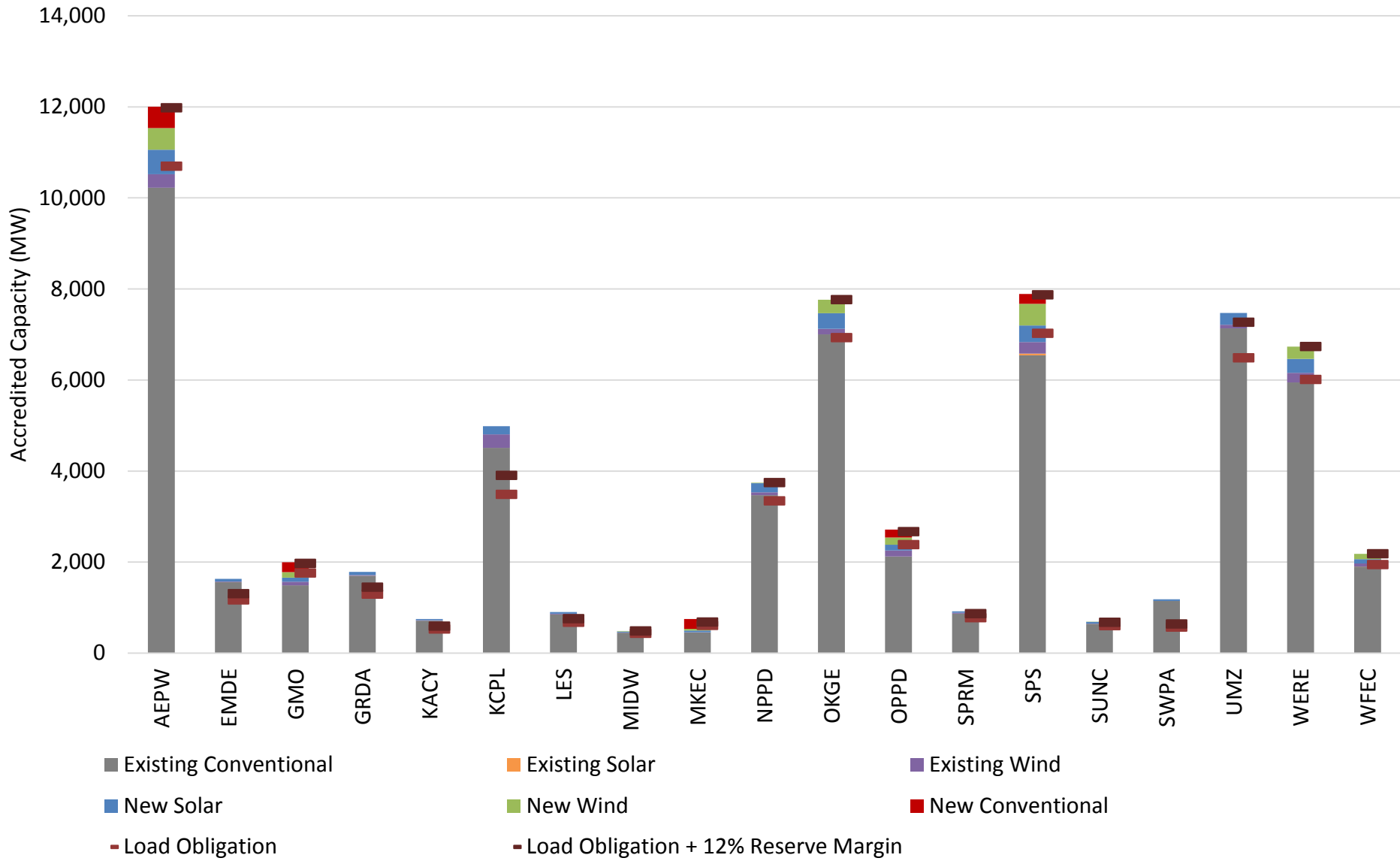
*Load obligation shown includes losses

Future 1 Resource Adequacy By Zone - 2029



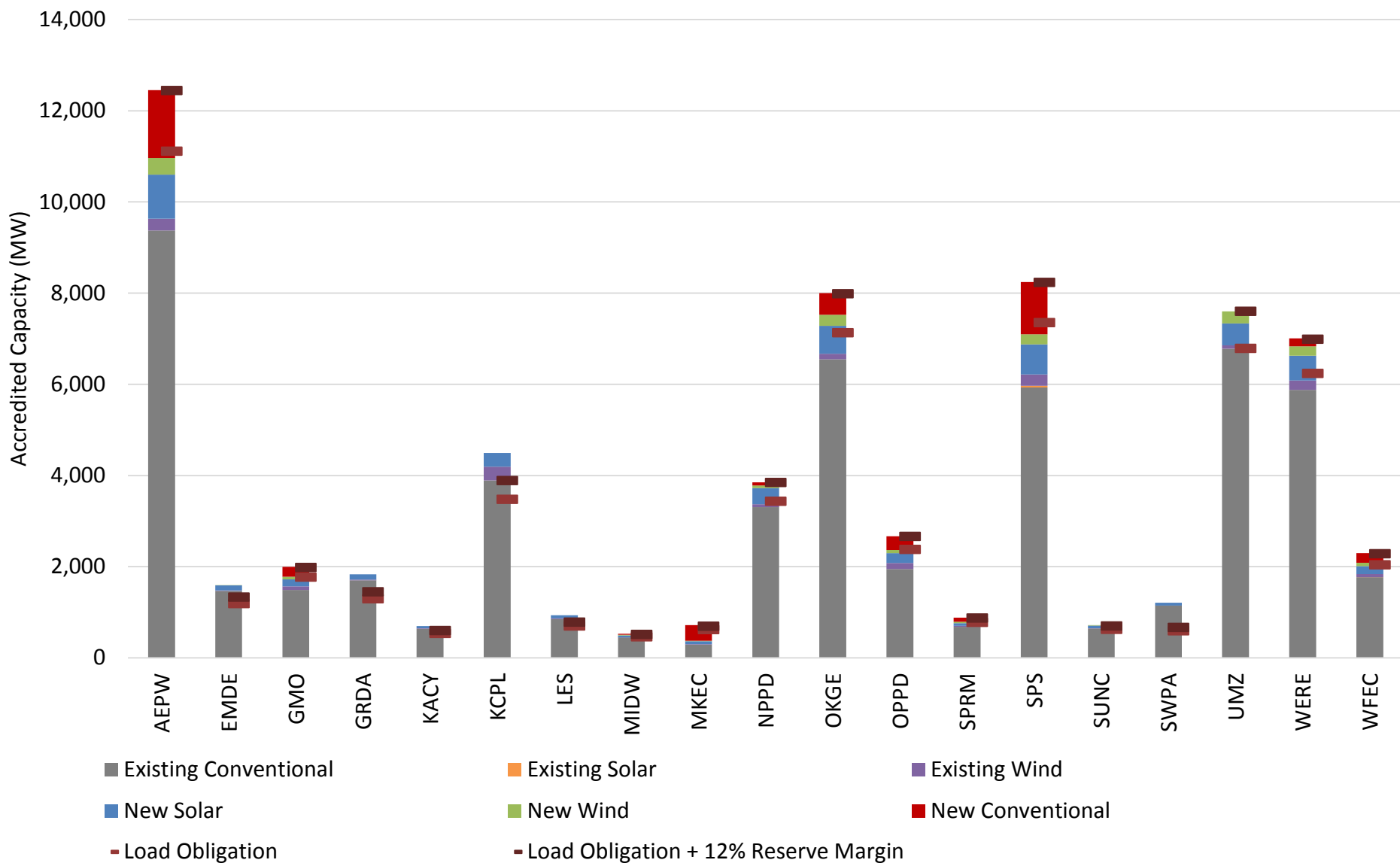
*Load obligation shown includes losses

Future 2 Resource Adequacy By Zone - 2024



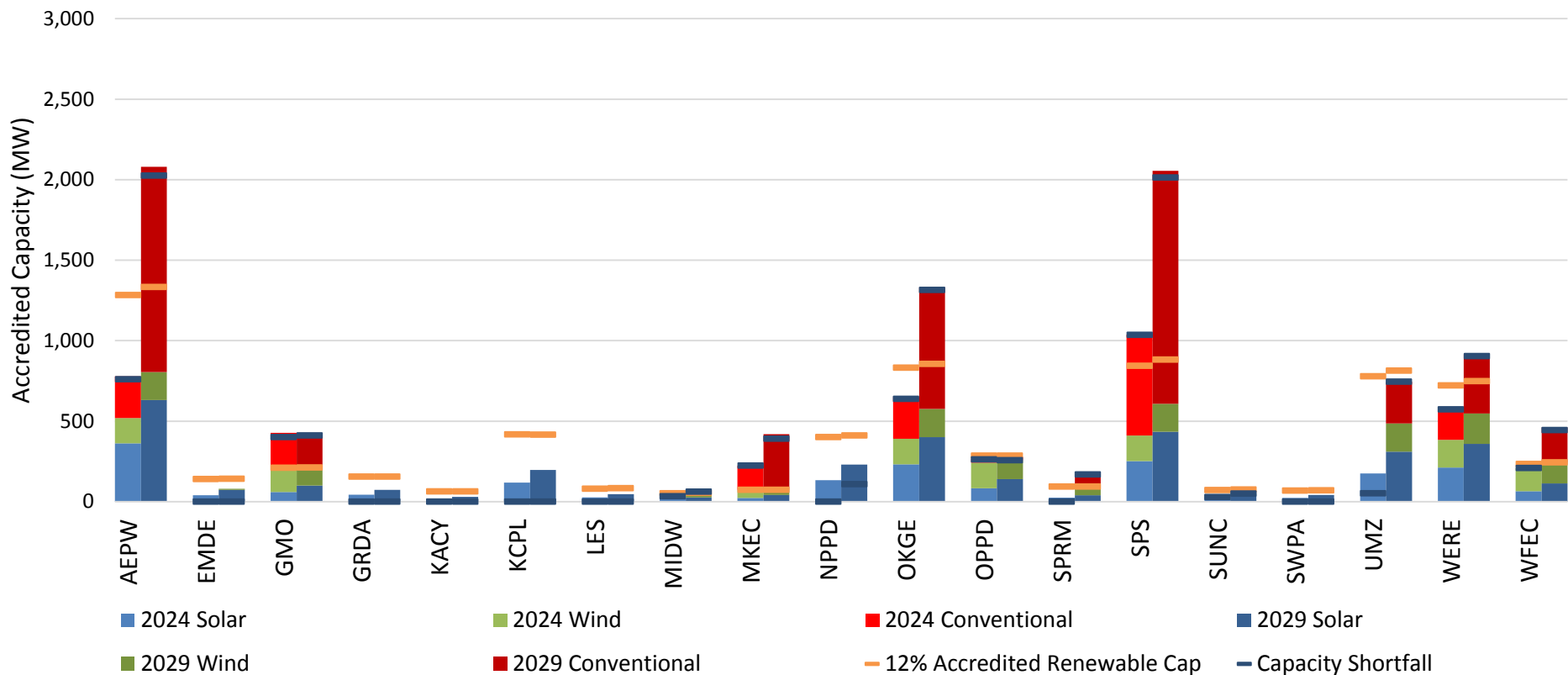
*Load obligation shown includes losses

Future 2 Resource Adequacy By Zone - 2029



*Load obligation shown includes losses

Future 1 Accredited Resource Additions



Future 2 Accredited Resource Additions

