

EXHIBIT
22



2016 OMS MISO Survey Results

Furthering our joint commitment to regional resource assessment and transparency in the MISO region, OMS and MISO are pleased to announce the results of the 2016 OMS MISO Survey

July 2016 Resource Adequacy Subcommittee

OMS – MISO Survey Executive Summary

MISO Region is projected to have adequate resources to meet its Planning Reserve Requirement for 2017; additional action will be needed to ensure sufficient resources are available going forward

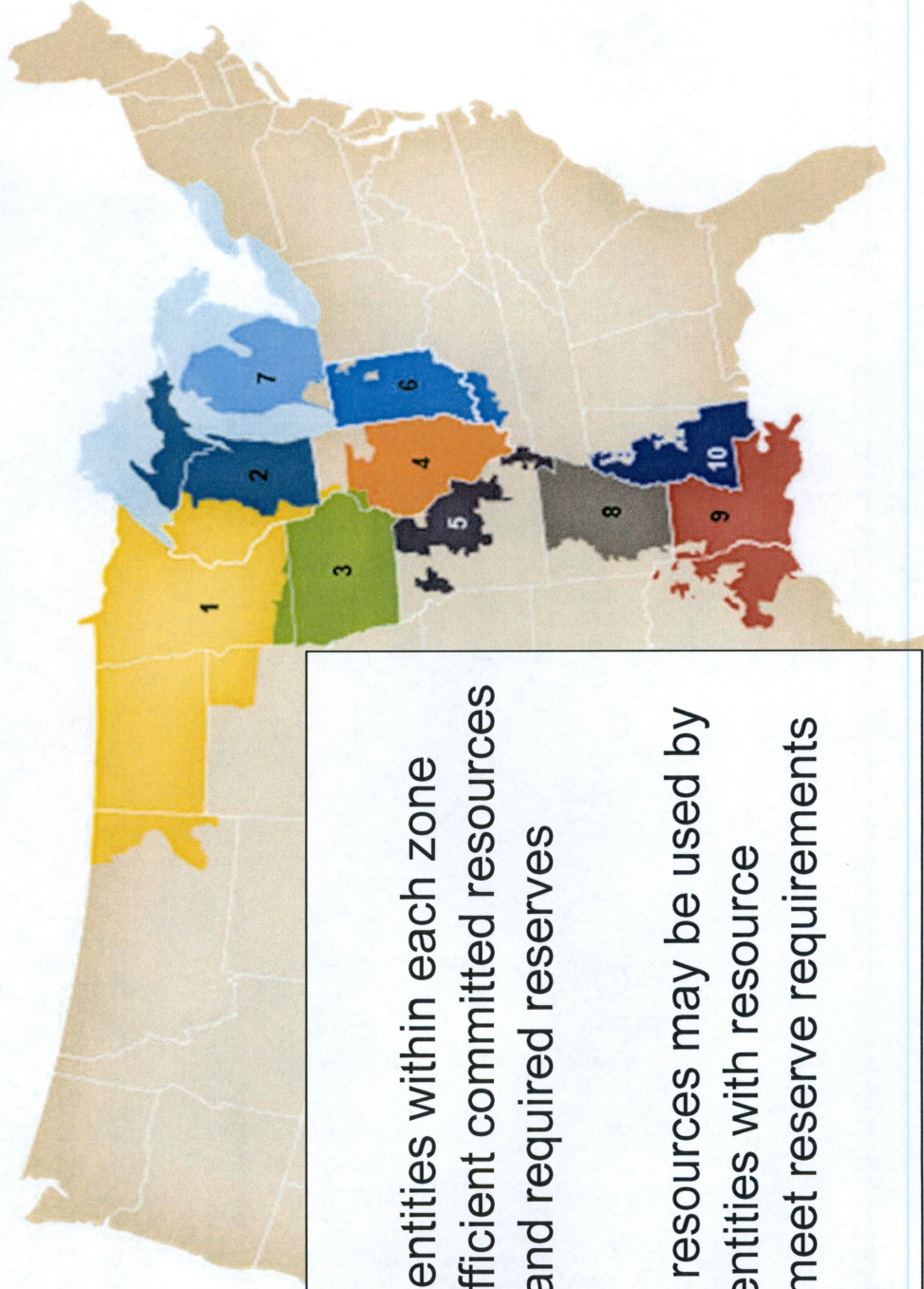
For 2017,

- The region has 2.7 GW (2.2%) in excess of the projected resource requirement
- Recent publicly announced retirements decrease this excess to 0.9 GW (0.7%)
- Several zones are below their resource requirement and will rely on external and inter-zonal imports
- Demand has shrunk due to reduced forecasts and spot load reductions
- Supply has declined due to plant retirements in excess of new resource additions

Beyond 2017,

- Continued resource adequacy will depend on uncommitted resources or new generation
- Interconnection Queue shows mixed levels of commitment towards building new generation
- This outlook depends heavily on load projections; current forecasts of modest load growth are not in line with recent history of flat year-to-year loads

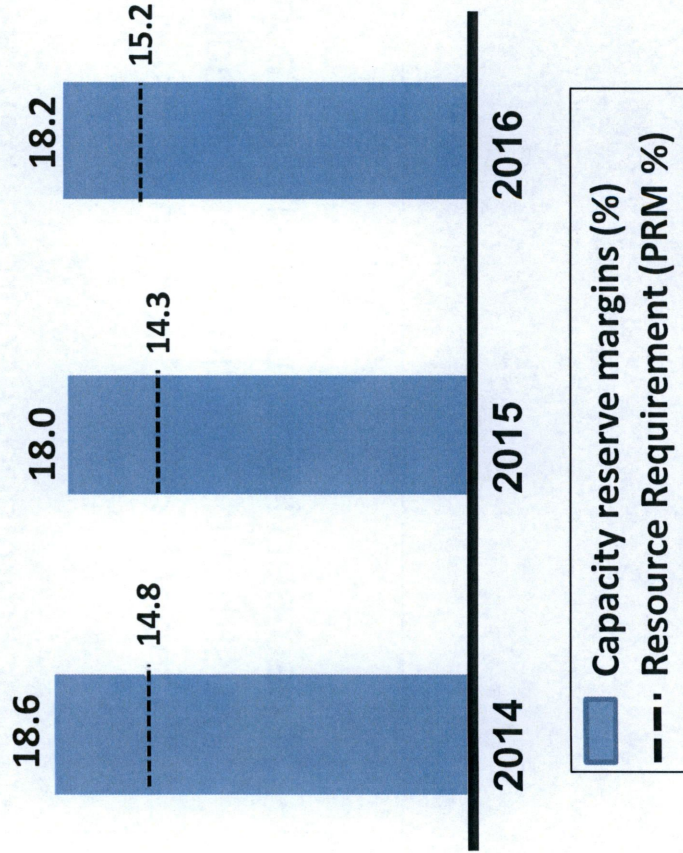
Understanding Resource Adequacy Requirements



- Load serving entities within each zone must have sufficient committed resources to meet load and required reserves
- Uncommitted resources may be used by load serving entities with resource shortages to meet reserve requirements

Planning Reserve Margins capture the risks in the load and generation on the system

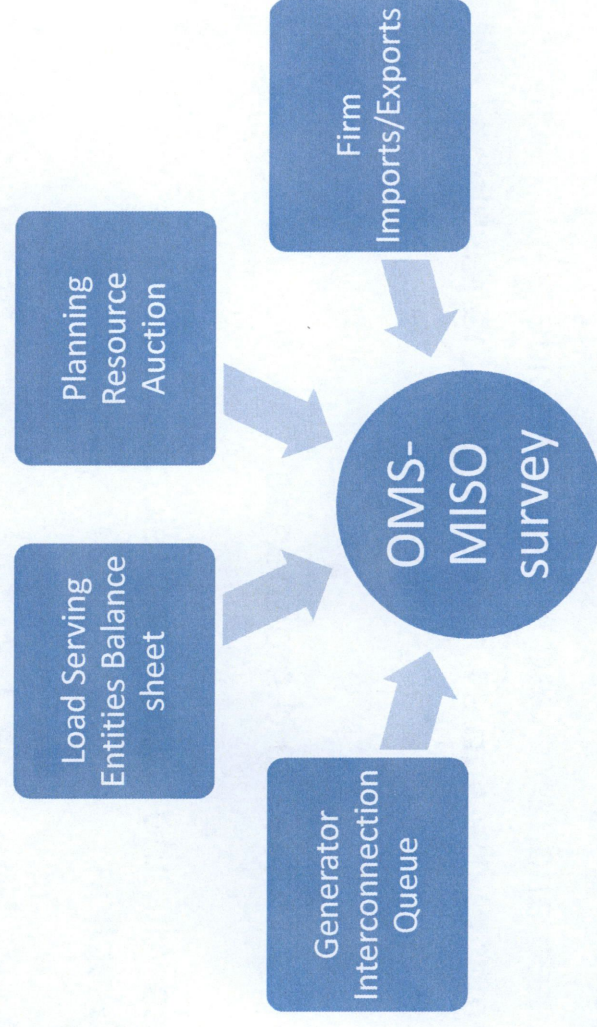
Projected Reserve Margins and Requirements (% ICAP)



- Planning Reserve Margins show how much capacity is needed as a percentage above load, to maintain resource adequacy
- The percent resource requirements may be **higher** when
 - Fleet forced outage rate is **higher**
 - Load volatility is **higher**
 - Load forecasts are **lower**

What's in the survey?

- OMS-MISO survey responses
 - Insight into confidence around availability of resources
- Load data
- All generation within MISO, including merchant resources, considered
- External imports, exports, and inter-zonal transfers accounted for



Survey Improvements

- **Documentation and survey format**
 - Survey documentation created and reviewed with stakeholders
 - Improvements made to format of the survey requests and the resulting balance sheet to reduce the burden on respondents
- **Data collection**
 - Surveys sent to Load Serving Entities and Independent Power Producers
 - Load forecasts were aligned with the load submissions used in the most recent Planning Resource Auction
- **Post-Processing**
 - Separation of Zone 4 and Zone 5 results
 - Aligned survey results with publically announced potential suspensions and retirements

Illustrative OMS MISO Data Request

Existing Resources

LSE	LBA	Actual LRZ Resource Location	Physical Location (City, State)	MECT Planning Resource Name	Fuel Type of Planning Resource	Planning Resource Type	Corrected ICAP (UCAP Renewables)	UCAP MW	2017*		2017**		2025	2025
									YES/NO	Factor	YES/NO	Factor		
TEST_LSE	Zone X	TBD	Example unit 1	Coal	Gen	165.0	159.2	Yes	H	...	...	No	H
TEST_LSE	Zone X	TBD	Example unit 2	Gas	Gen	153.0	145.9	Yes	H	...	...	Yes	H
TEST_LSE	Zone X	TBD	Example unit 3	Diesel	BTMG	26.5	21.3	Yes	H	...	...	Yes	H
TEST_LSE	Zone X	TBD	Example unit 4	Gas	DRR	36.8	36.8	Yes	H	...	...	Yes	L
TEST_LSE	Zone X	TBD	Example unit 5	Gas	ER	88.6	84.7	Yes	H	...	...	No	L

New Resources

LSE	Actual LRZ Resource Location	Project Name	Tier 1, Tier 2, Tier 3	Resource Type	Location	ICAP (Intermittent Non-Wind & Solar UCAP)	MISO Class EFORD	UCAP MW	Year Expected for Capacity Credit	GIQ - Project Number
TEST_LSE	Zone X	New Project II	Tier 3	CC		250	0.00378	249.1	2021	

* Resource Availability

** Certainty Factor

Illustrative OMS MISO Data Request

Internal MISO Transfers

LSE	LBA	Actual LRZ Resource is Physically Located	MECT Contract Name	MECT Planning Resource Name	Planning Resource Fuel Type	LRZ Internal Transfer Type (In/out)	Corrected ICAP (UCAP Renewables)	UCAP MW	2017 YES/NO	2017 Factor	...	2025 YES/NO	2025 Factor
TEST_LSE A	Zone X	Contract with LSE B and LSE A	Unit 1	Coal	LRZ Internal Transfer- Out	287.7	285.3	Yes	H	...	Yes	H	
TEST_LSE A	Zone X	Capacity Deal with LSE C and LSE A	Unit 2	Coal	LRZ Internal Transfer- In	276.7	274.4	Yes	H	...	Yes	H	
TEST_LSE B	Zone Y	Contract with LSE B and LSE A	Unit 1	Coal	LRZ Internal Transfer- In	287.7	285.3	Yes	H	...	Yes	H	
TEST_LSE C	Zone Z	Capacity Deal with LSE C and LSE A	Unit 2	Coal	LRZ Internal Transfer- Out	276.7	274.4	Yes	H	...	Yes	H	

Full Responsibility Transactions

LSE	LRZ	MECT Contract Name	Sale or Purchase	Counterparty	FRT MW Sales (-) Purchase (+)	2017 YES/NO	2017 Factor	...	2025 YES/NO	2025 Factor
TEST_LSE A	Zone X	LSE A to LSE C PY16-17	Sale	TEST_LSE C	-50	Yes	H	...	Yes	H
TEST_LSE C	Zone X	LSE A to LSE C PY 16-17	Purchase	TEST_LSE A	50	Yes	H	...	Yes	H

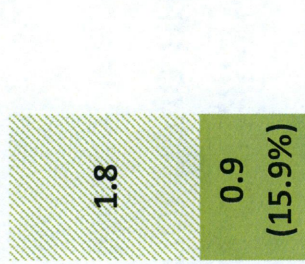
Understanding Resource Availability

- **High Certainty Resources** are committed to serving MISO load, such as
 - Resources within the rate base of MISO utilities that are confirmed to be available
 - New generators with signed interconnection agreements
 - External resources with firm contracts to MISO load
- **Low Certainty Resources** may be available to serve MISO load but do not have any firm commitments to do so
 - Most of these resources are potential retirements or suspensions
- **Unavailable resources** are not included in the survey totals
 - Resources with firm commitments to non-MISO load
 - Units with finalized retirements or suspensions
 - Potential new generators without a signed Generator Interconnection Agreement

In 2017, modest excess capacity is projected to address zonal deficits

2017 Outlook, ICAP GW (% Reserves)

2.7 (17.4%)

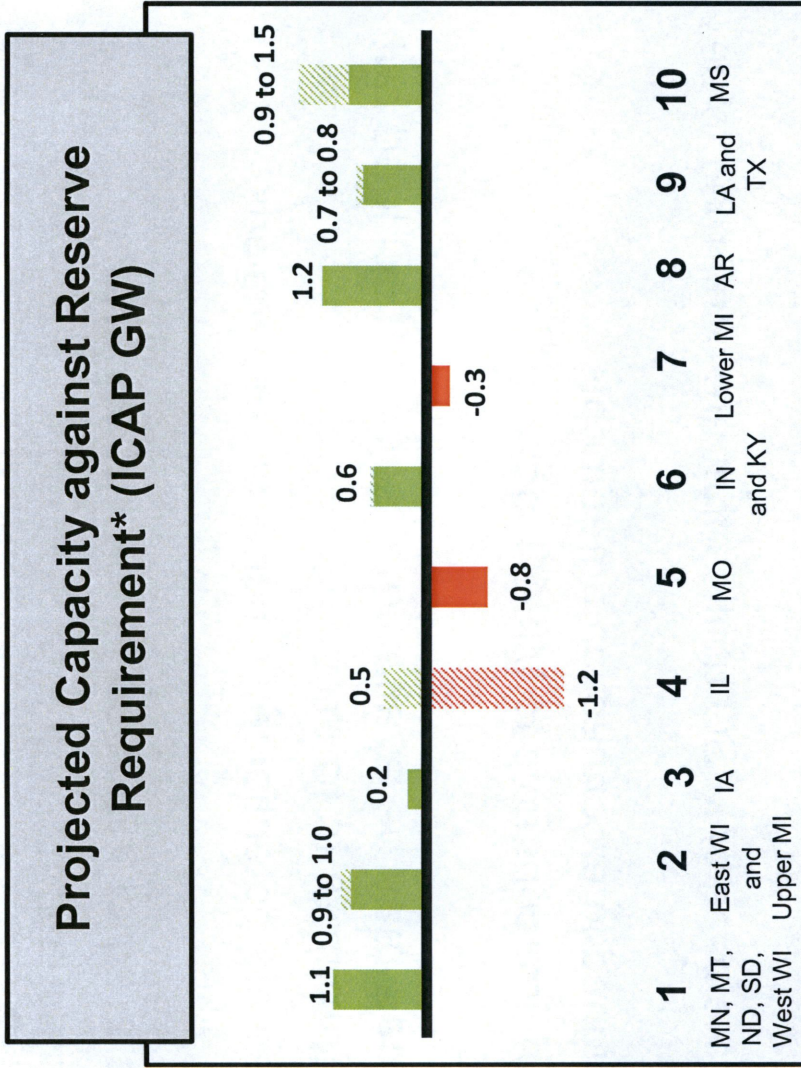


One day in ten
PRM (15.2%)

Low Certainty Resource
Impact on Surplus / Deficit

Surplus / Deficit with High Certainty Resources

Shading represents total low certainty resources when there is a deficit of high certainty resources

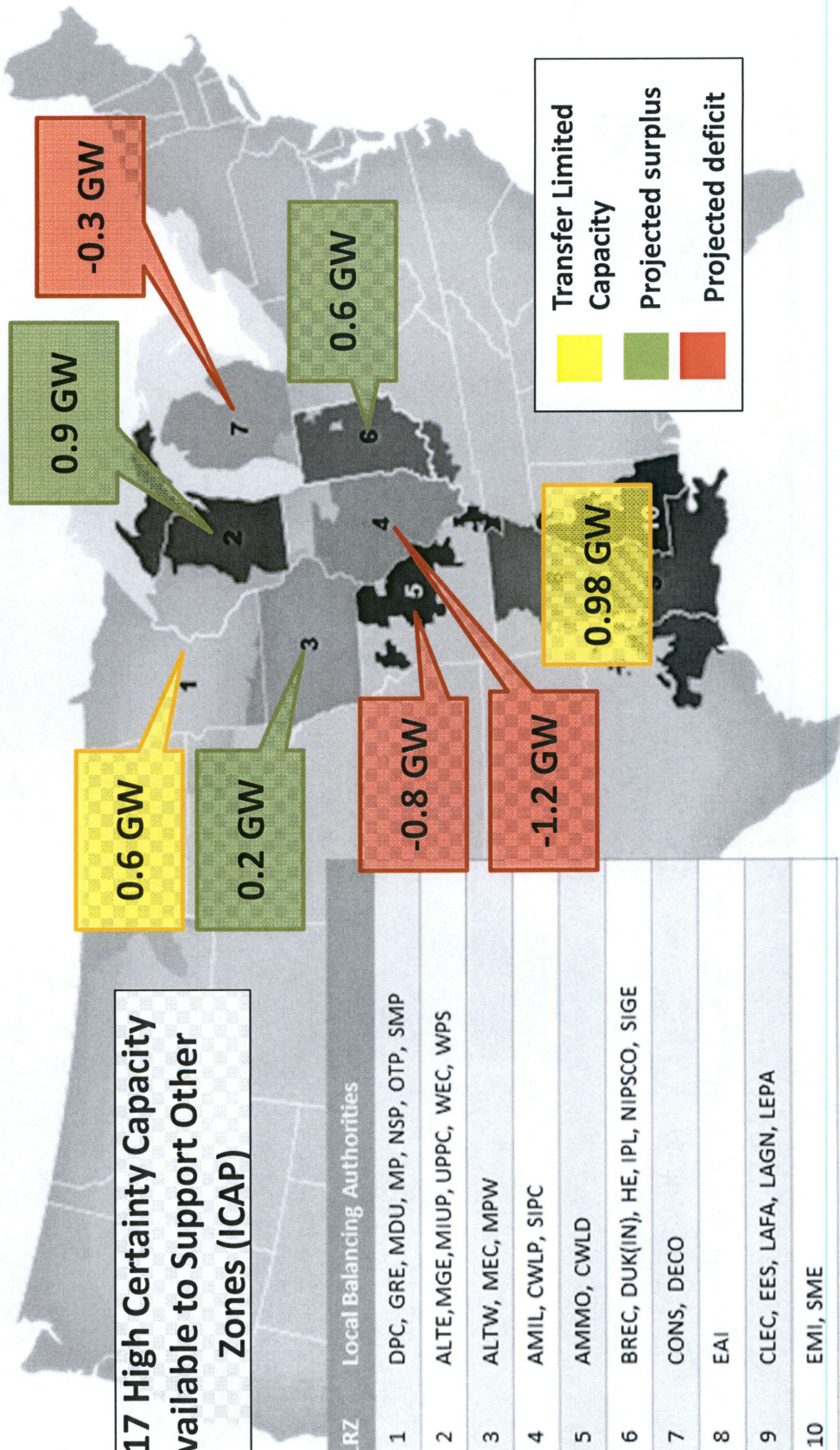


*Positions include reported inter-zonal transfers
Publicly announced potential retirements were included as low certainty resources
Exports from Zone 1 were limited by the zone's estimated UCAP Capacity Export Limit to 0.6 GW
Exports from Zone 8, 9, and 10 were limited by the UCAP Subregional Power Balance Constraint to 0.98 GW

For 2017, all projected capacity is not available to serve load outside of its zone due to transfer limitations

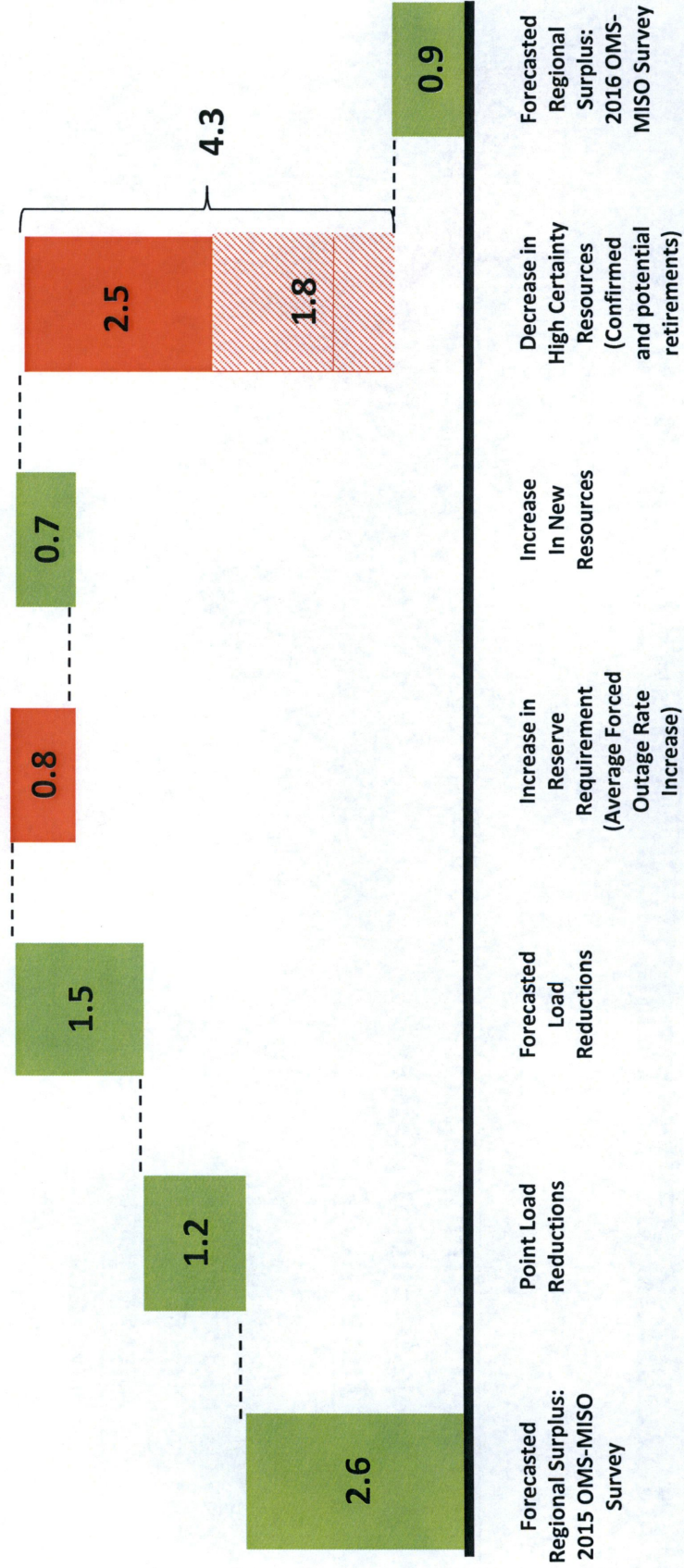
2017 High Certainty Capacity Available to Support Other Zones (ICAP)

LRZ	Local Balancing Authorities
1	DPC, GRE, MIDU, MP, NSP, OTP, SMP
2	ALTE,MGE,MIUP, UPPC, WEC, WPS
3	ALTW, MEC, MPW
4	AMIL, CWLP, SIPC
5	AMMO, CWLD
6	BREC, DUK(IN), HE, IPL, NIPSCO, SIGE
7	CONS, DECO
8	EAI
9	CLEC, EES, LAFA, LAGN, LEPA
10	EMI, SME



The 2017 results show the impacts of potential or actual generation retirements, as well as changes in load

2017 Outlook
Comparison of High Certainty Resources
In GW (ICAP)



Action is required in the near term to ensure sufficient resources in future years

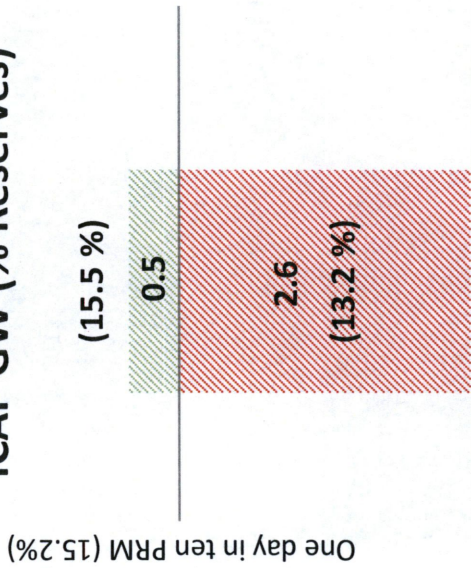
Projected Capacity Position in ICAP GW (% Reserves)



- Regional outlook includes projected constraints on capacity, including Capacity Export Limits and the Subregional Power Balancing Constraint
- Resources with publicly announced potential retirements or suspensions were counted as low certainty.
- These figures will change as future capacity plans are solidified by load serving entities and state commissions.

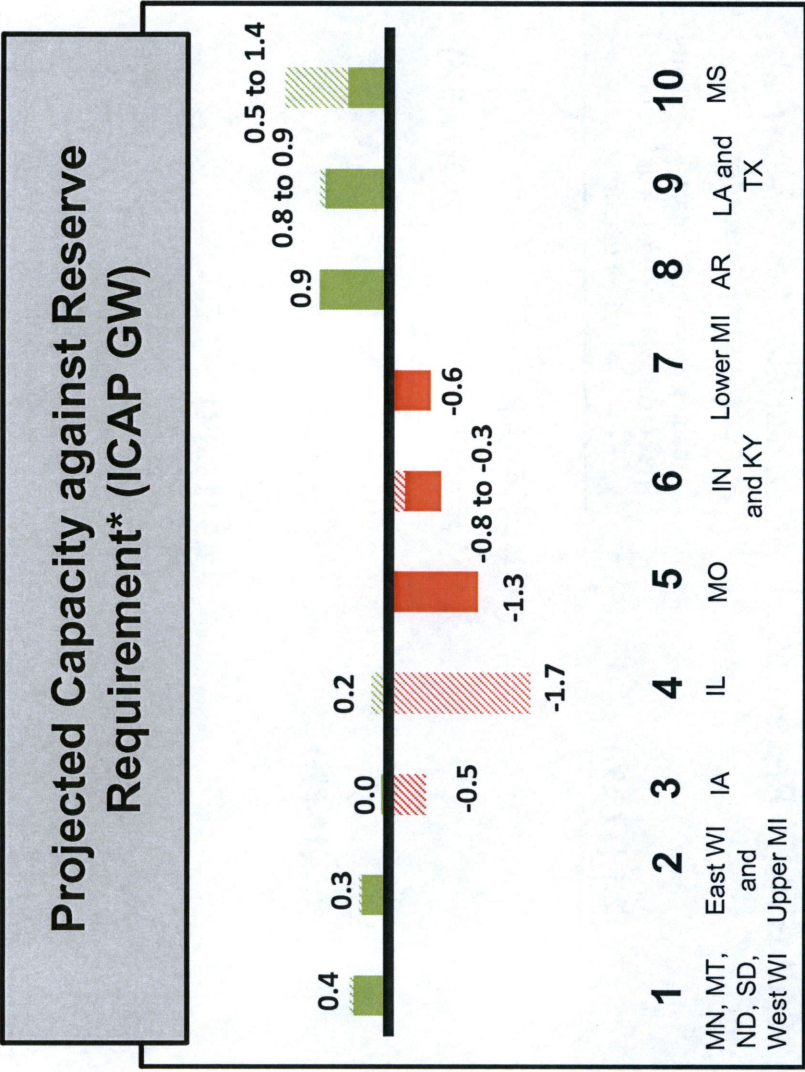
2021 Capacity Projections

2021 Outlook, ICAP GW (% Reserves)



Low Certainty Resource
Impact on Surplus / Deficit
Surplus / Deficit with High
Certainty Resources

Shading represents total low certainty resources when there is a deficit of high certainty resources

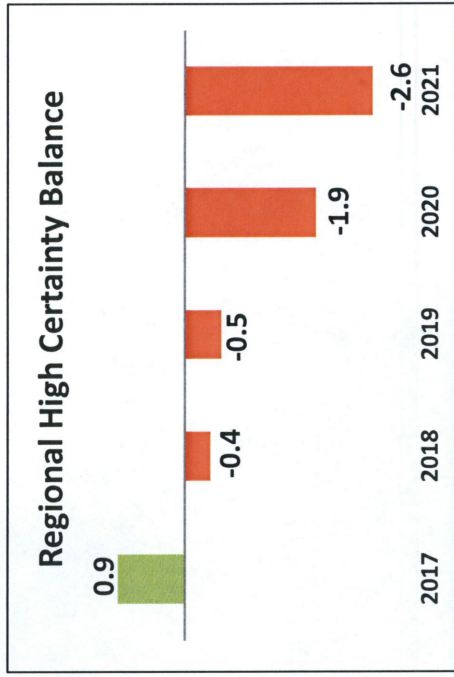
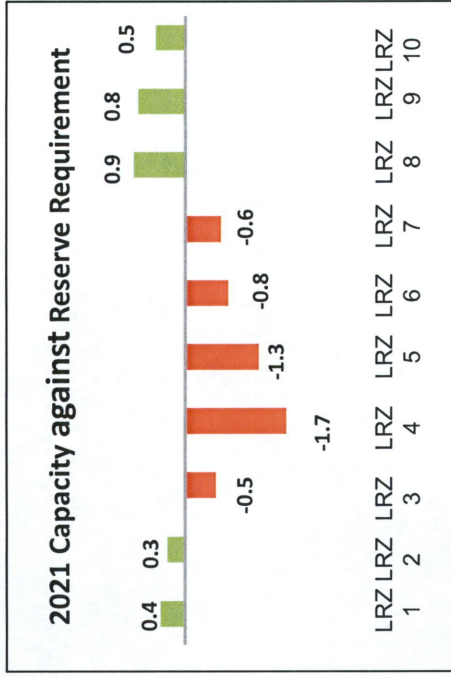
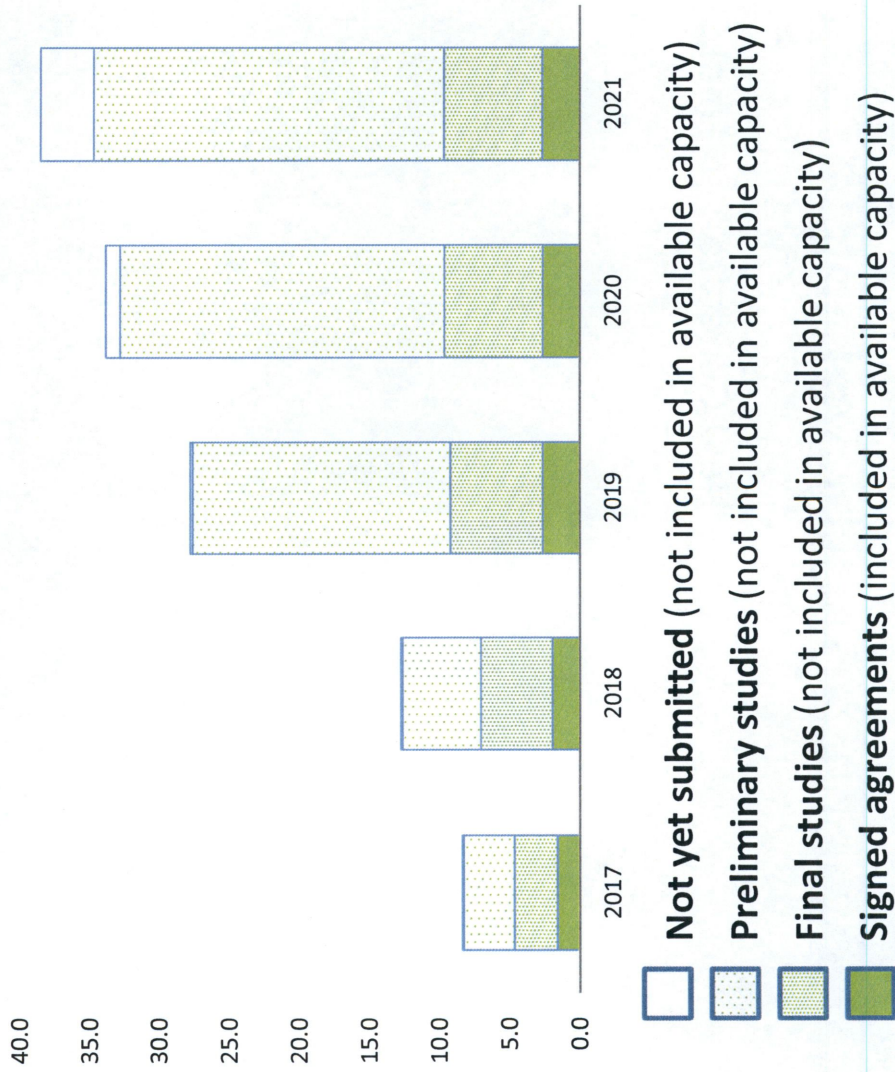


*Positions include reported inter-zonal transfers
 Publicly announced potential retirements were included as low certainty resources
 Exports from Zone 8, 9, and 10 were limited by the UCAP Subregional Power Balance Constraint to 1.5 GW



Continued commitment to firming up planned generation interconnections through the MISO process will be required

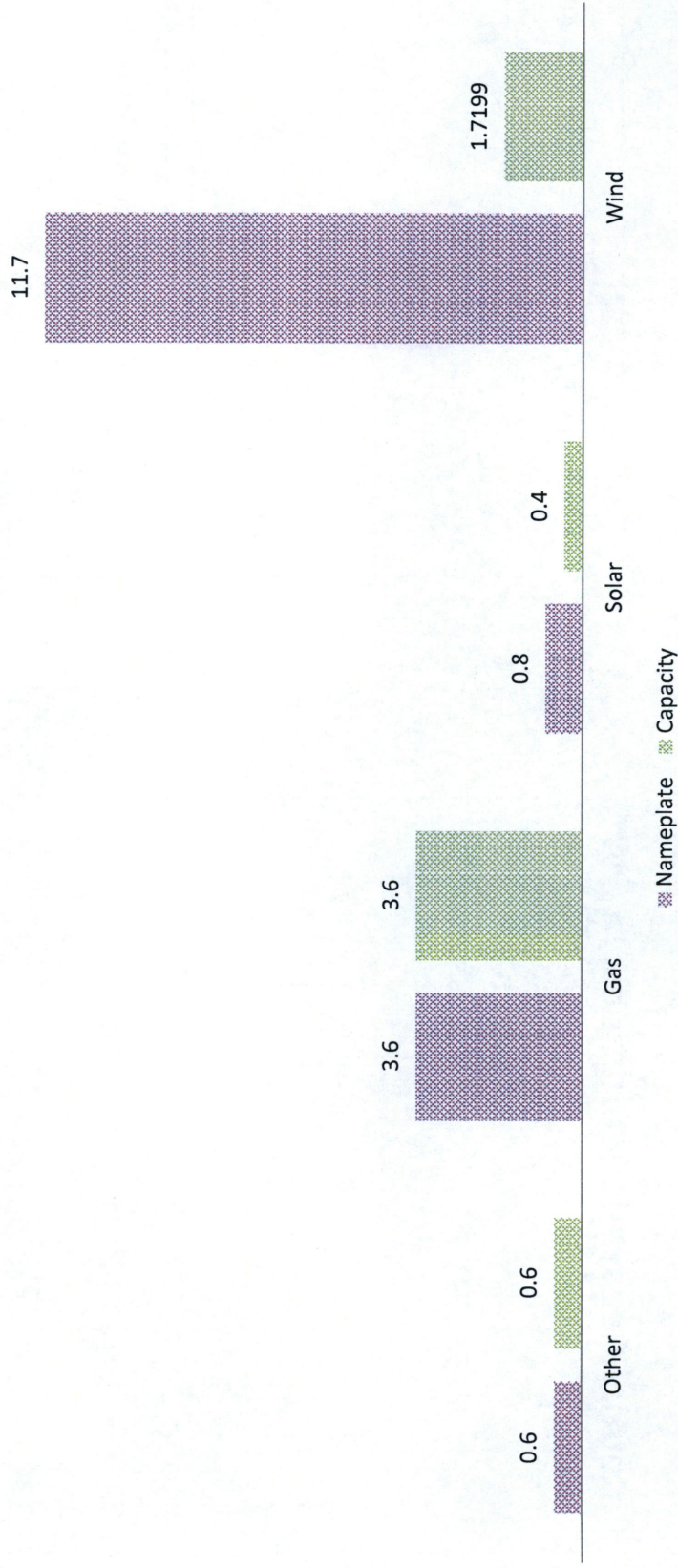
Potential Generation Additions, in GW*



* Wind and solar resources are represented at their expected capacity credit

Generators in the final stages of study are primarily wind and solar resources, with lower capacity values

New Generators in Final Studies (MW)



Previous OMS MISO survey shows similar results as the 2016 PRA

	Demand (GW)	Planning Reserve Margin Requirement (GW)	Total Supply (GW)	Constrained Supply (GW)	Net Supply Available (GW)
2016 projection from 2015 OMS MISO survey	128.9	147.3	152.5	3.4	149.1
2016 PRA*	125.9	145.0	151.6	2.8	148.8

* Planning Resource Auction data converted to ICAP for comparison purposes

OMS – MISO Survey Executive Summary

MISO Region is projected to have adequate resources to meet its Planning Reserve Requirement for 2017; additional action will be needed to ensure sufficient resources are available going forward

For 2017,

- The region has 2.7 GW (2.2%) in excess of the projected resource requirement
- Recent publicly announced retirements decrease this excess to 0.9 GW (0.7%)
- Several zones are below their resource requirement and will rely on external and inter-zonal imports
- Demand has shrunk due to reduced forecasts and point load reductions
- Supply has declined due to plant retirements in excess of new resource additions

Beyond 2017,

- Continued resource adequacy will depend on uncommitted resources or resources with potential retirements
- Continued commitment to firming up planned generation interconnections through the MISO queue process will also be required
- This outlook depends heavily on load projections; current forecasts of modest load growth are not in line with recent history of flat year-to-year loads

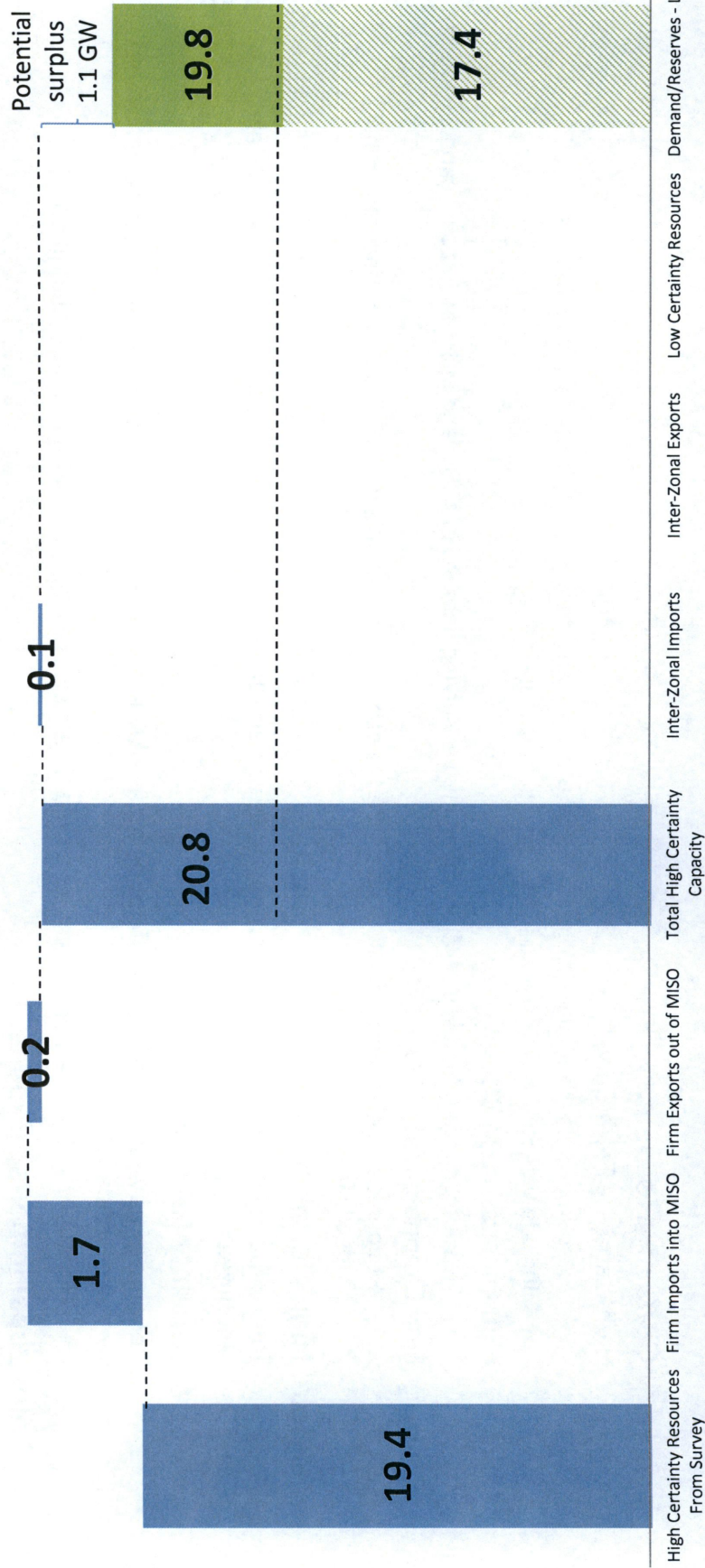
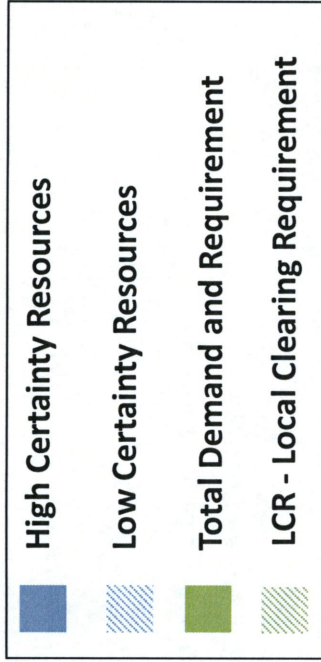
Definitions

- **High Certainty Resources**
 - **High Certainty From Survey**
 - Resources within the MISO footprint committed to serving demand, based on survey responses
 - Includes resources with signed Interconnection Agreements
 - **Firm Imports into MISO**
 - Resources located outside of MISO committed to serving demand in MISO and included in zonal capacity totals
 - **Firm Exports out of MISO**
 - Resources located inside of MISO committed to serving demand outside MISO and excluded from zonal capacity totals
- **Total High Certainty Capacity**
 - Total capacity available to serve demand in the given Planning Year. This will not include “Low” certainty resources
- **Low Certainty Resources**
 - Resources have some indication of not being available to serve demand and classified as ‘low certainty’ by survey responses
 - An example of a “low” certainty resource could be a resource that has submitted an attachment Y2
- **Inter-zonal Imports / Exports**
 - Resources from one zone within MISO which were designated as serving load in a different MISO zone by survey responses
- **Demand/Reserves**
 - Projected demand plus the MISO Planning Reserve Margin Requirement of 15.2%
 - A portion of this requirement may be served by capacity located outside of the zone

2017 Resource Adequacy Forecast Zone 1 (GW)

2016 OMS MISO Survey

June 2016
In GW



Values in Installed Capacity (ICAP)



2018 - 2020 Resource Adequacy Forecast Zone 1 (GW)

2016 OMS MISO Survey

June 2016

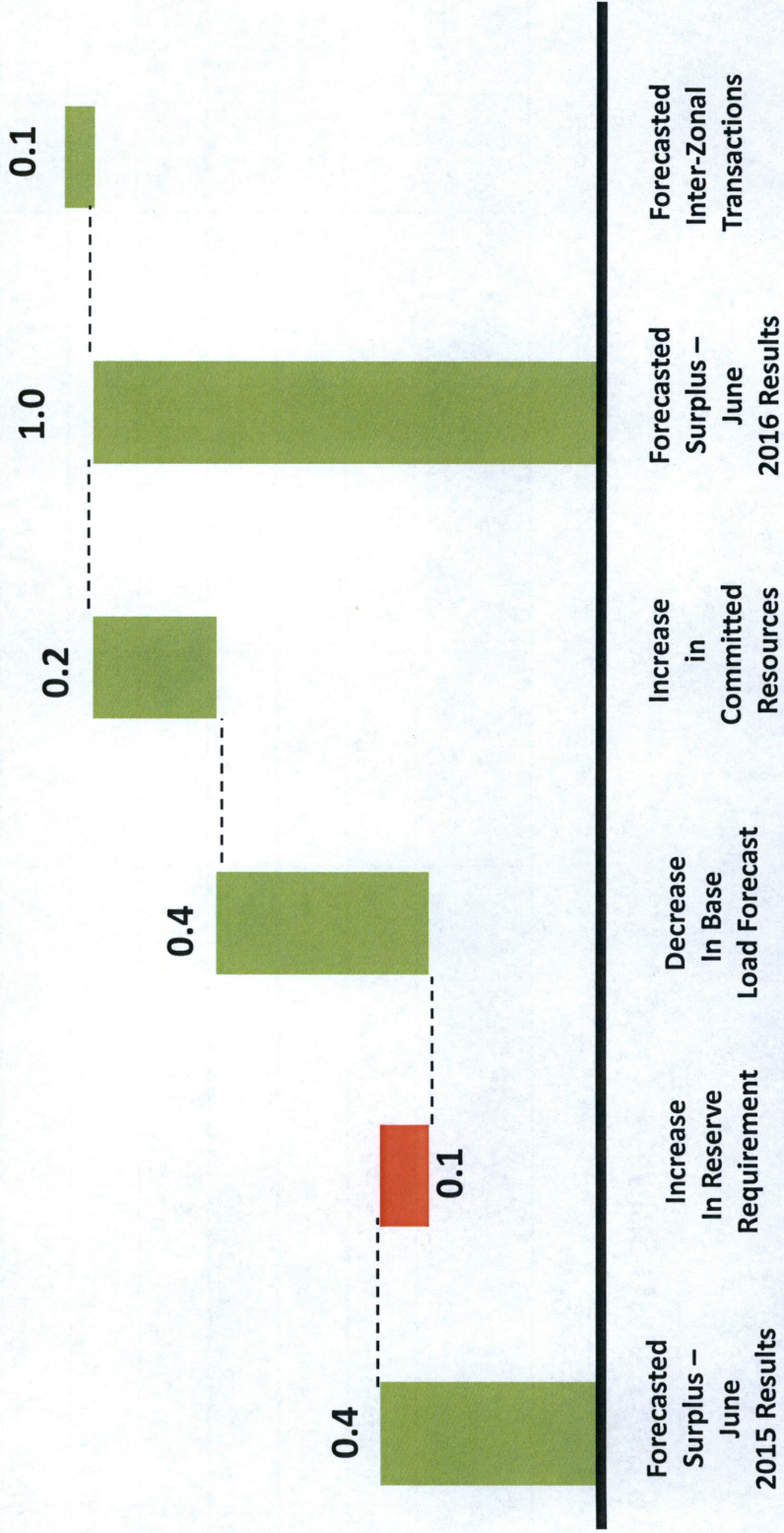
Values In GW

Zone 1	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	19.6	19.5	19.4	A
Firm Imports into MISO	1.6	1.6	1.5	B
Firm Exports out of MISO	0.2	0.2	0.2	C
Total High Certainty Capacity	21.0	20.9	20.7	D = (A+B)-C
Inter-Zonal Imports	0.1	0.2	0.2	E
Inter-Zonal Exports	0.0	0.0	0.0	F
Demand/Reserves	20.0	20.2	20.4	G
Firm Capacity Position	1.1	0.9	0.6	H=(D+E-F)-G
Low Certainty Resources	0.0	0.0	0.0	I
Potential Capacity Surplus/Deficit	1.1	0.9	0.6	J=(H+I)

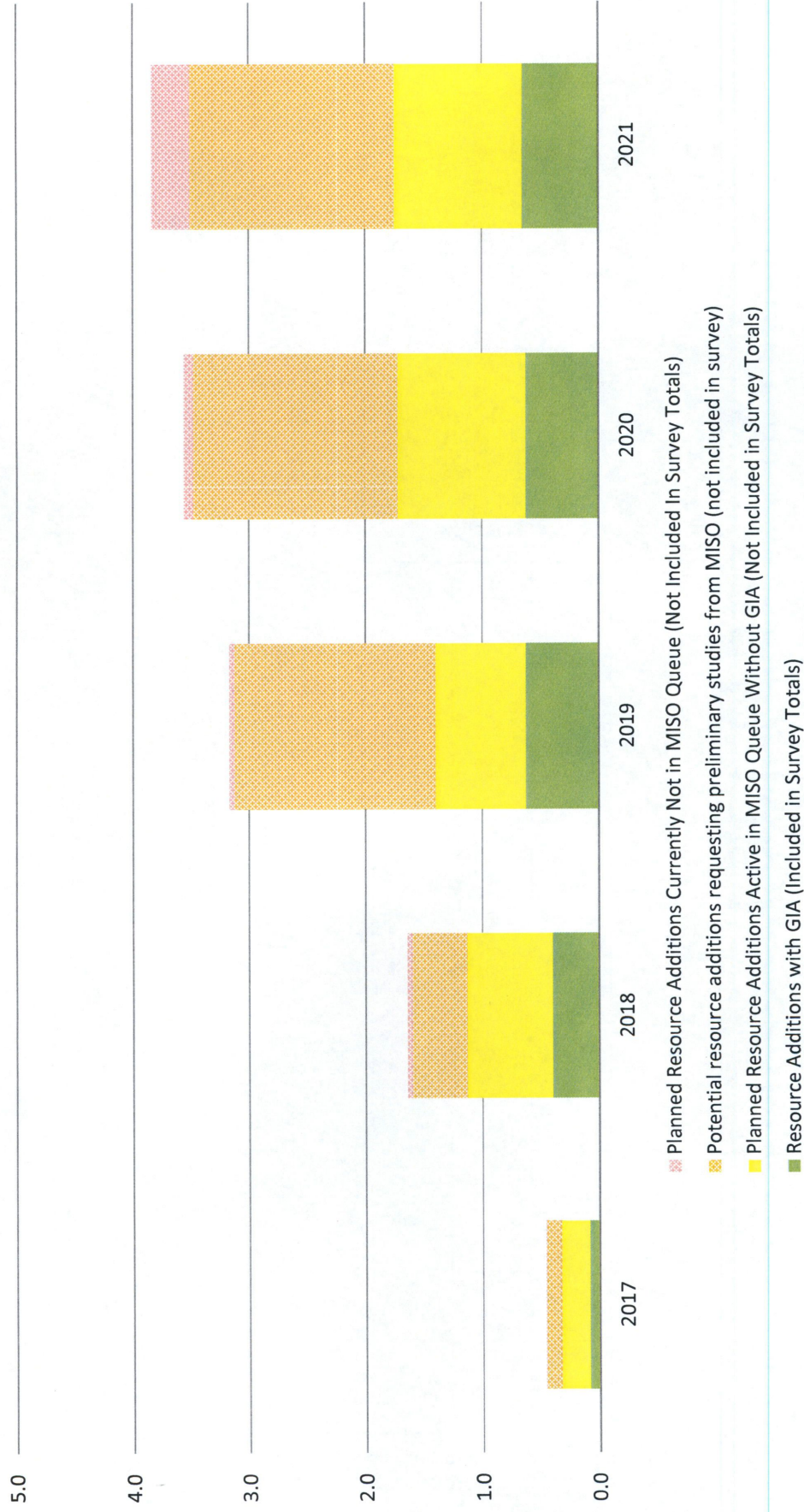
Values in Installed Capacity (ICAP)

2015 vs 2016 OMS MISO Survey Results Zone 1

2017 Outlook
Comparison of committed resources
In GW

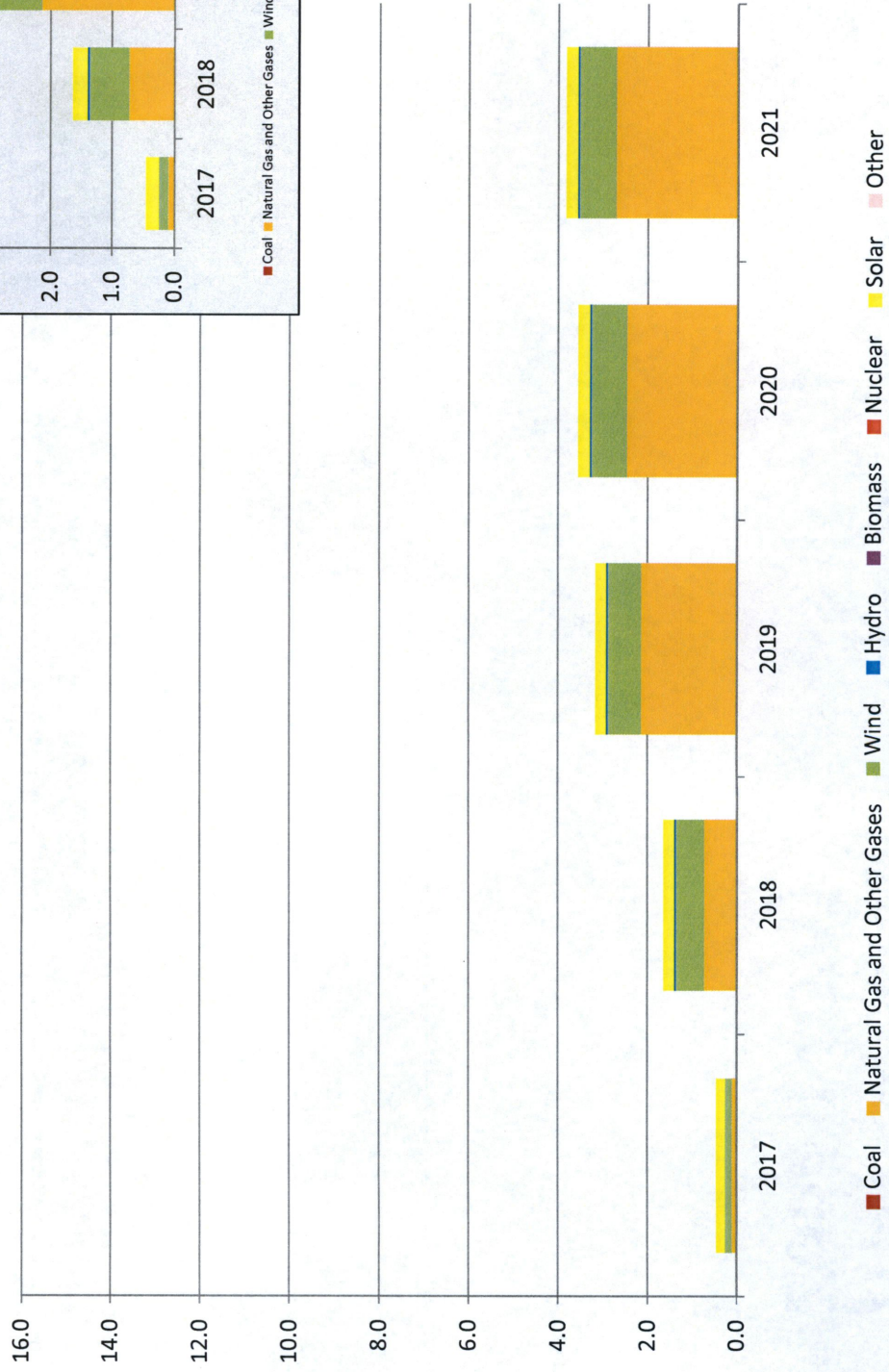
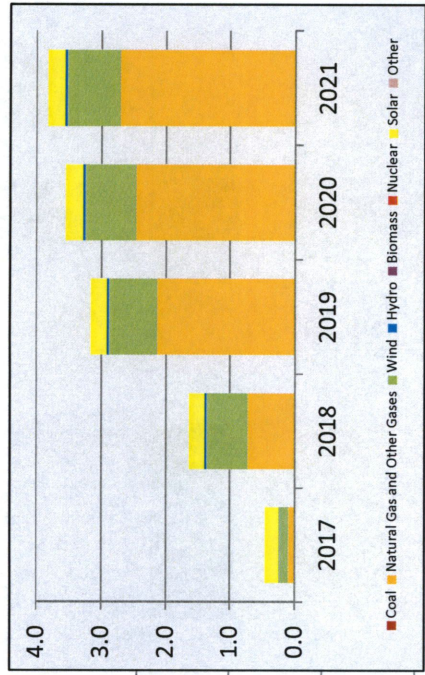


New Generation Reported in Survey Zone 1 (GW)



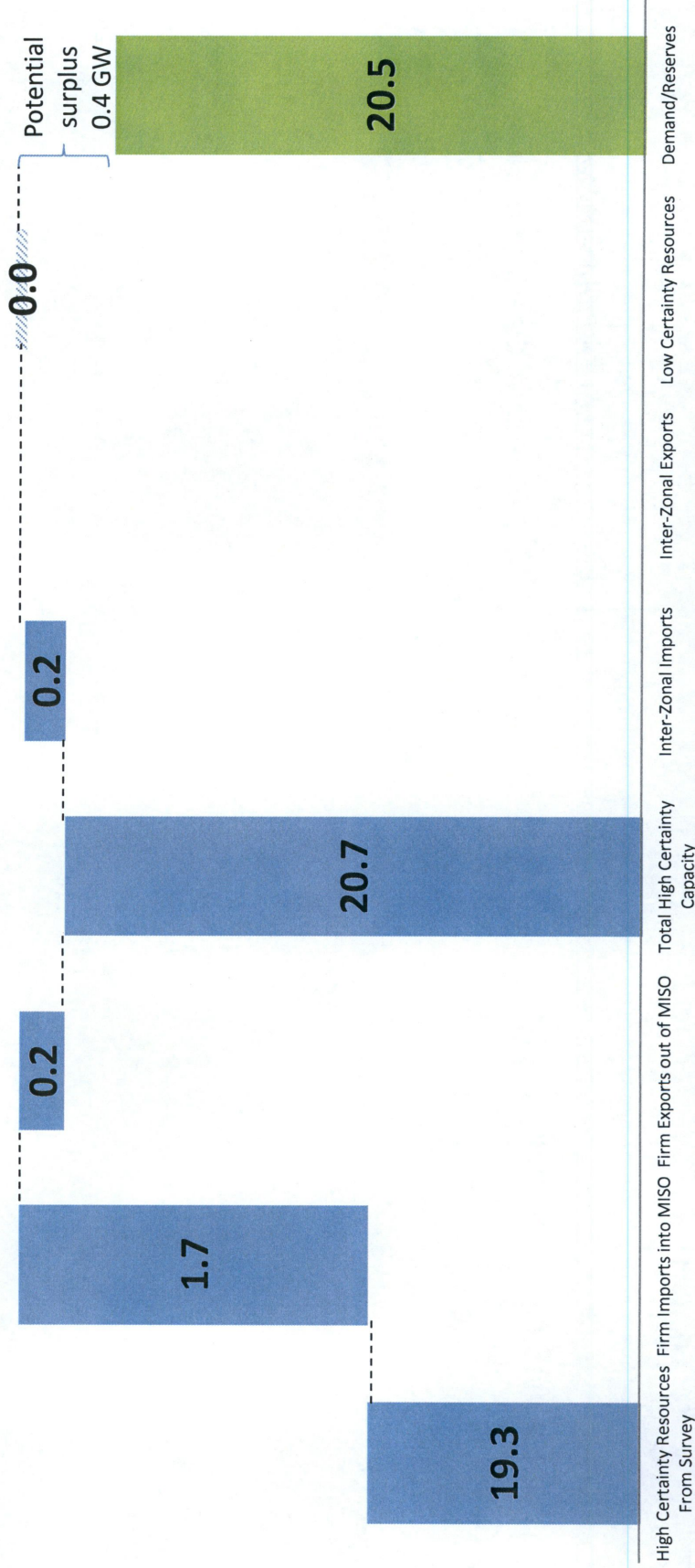
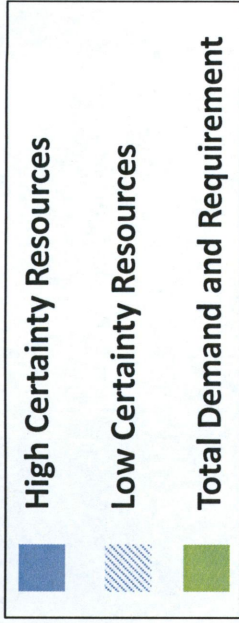
* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

Zone 1 Reported New Resources by Fuel Type



2021 Resource Adequacy Forecast Zone 1 (GW)

2016 OMS MISO Survey
June 2016
In GW

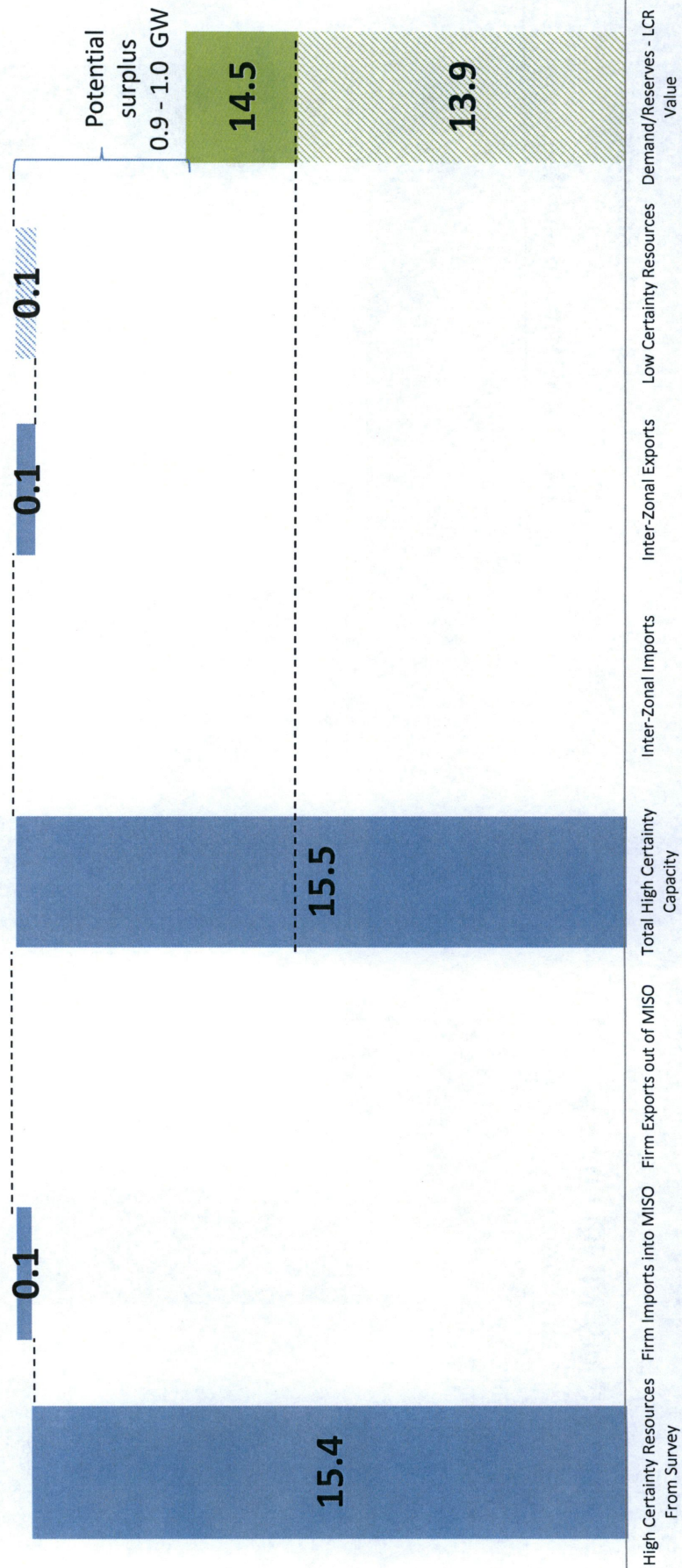
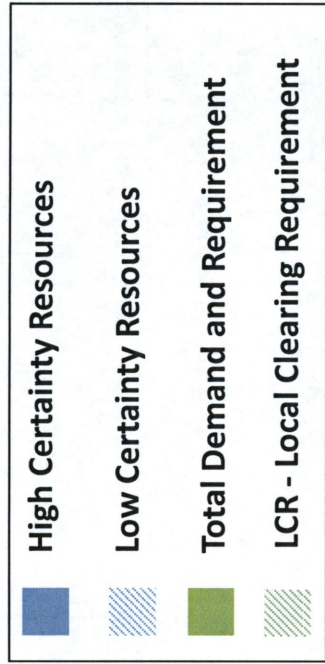


Values in Installed Capacity (ICAP)



2017 Resource Adequacy Forecast Zone 2 (GW)

2016 OMS MISO Survey
June 2016
In GW



Values in Installed Capacity (ICAP)



2018 - 2020 Resource Adequacy Forecast Zone 2 (GW)

2016 OMS MISO Survey

June 2016

Values In GW

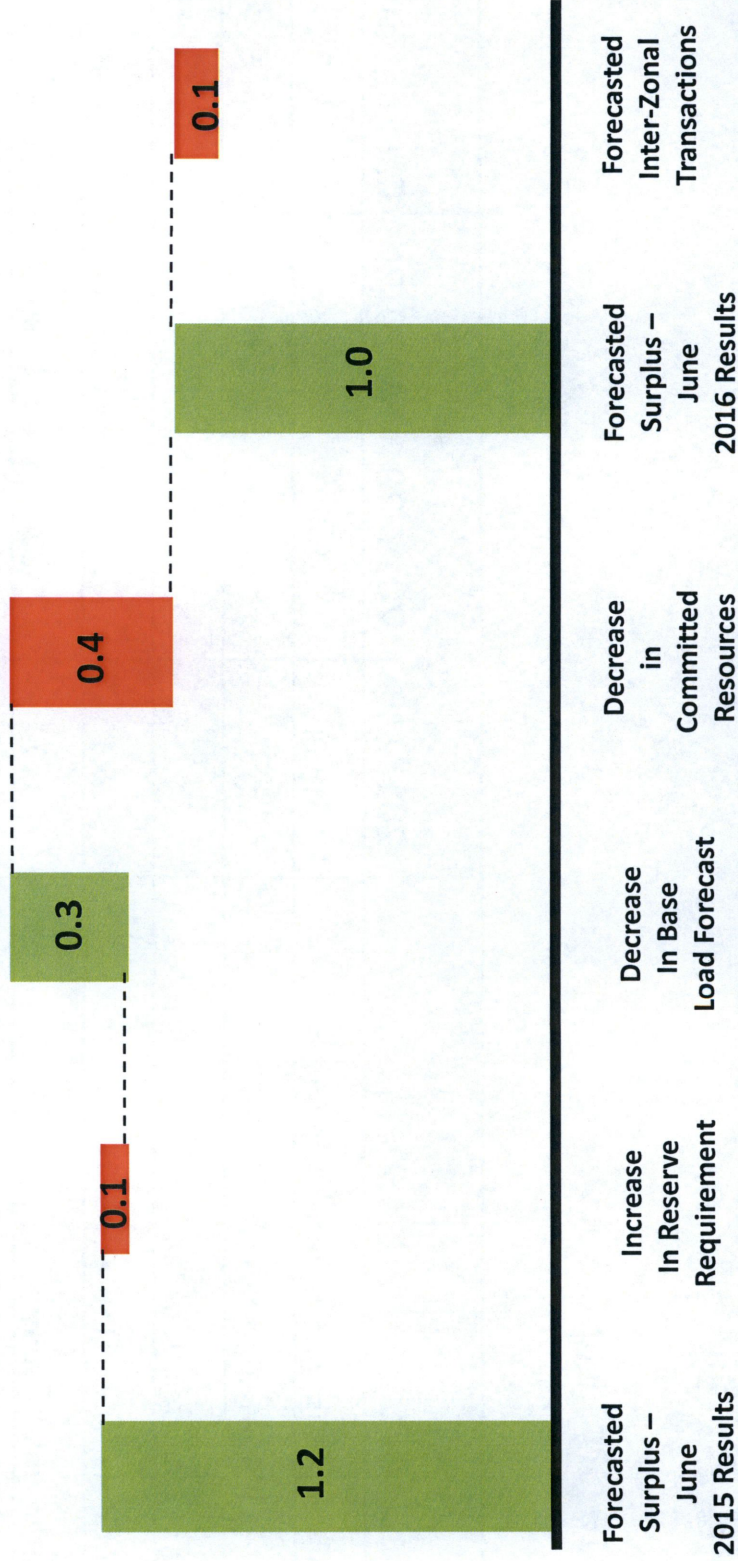
Zone 2	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	15.0	15.4	15.2	A
Firm Imports into MISO	0.1	0.1	0.1	B
Firm Exports out of MISO	0.0	0.0	0.0	C
Total High Certainty Capacity	15.1	15.5	15.3	D = (A+B)-C
Inter-Zonal Imports	0.0	0.0	0.0	E
Inter-Zonal Exports	0.2	0.2	0.2	F
Demand/Reserves	14.5	14.6	14.7	G
Firm Capacity Position	0.4	0.7	0.4	H=(D+E-F)-G
Low Certainty Resources	0.1	0.1	0.0	I
Potential Capacity Surplus/Deficit	0.5	0.8	0.4	J=(H+I)

Values in Installed Capacity (ICAP)

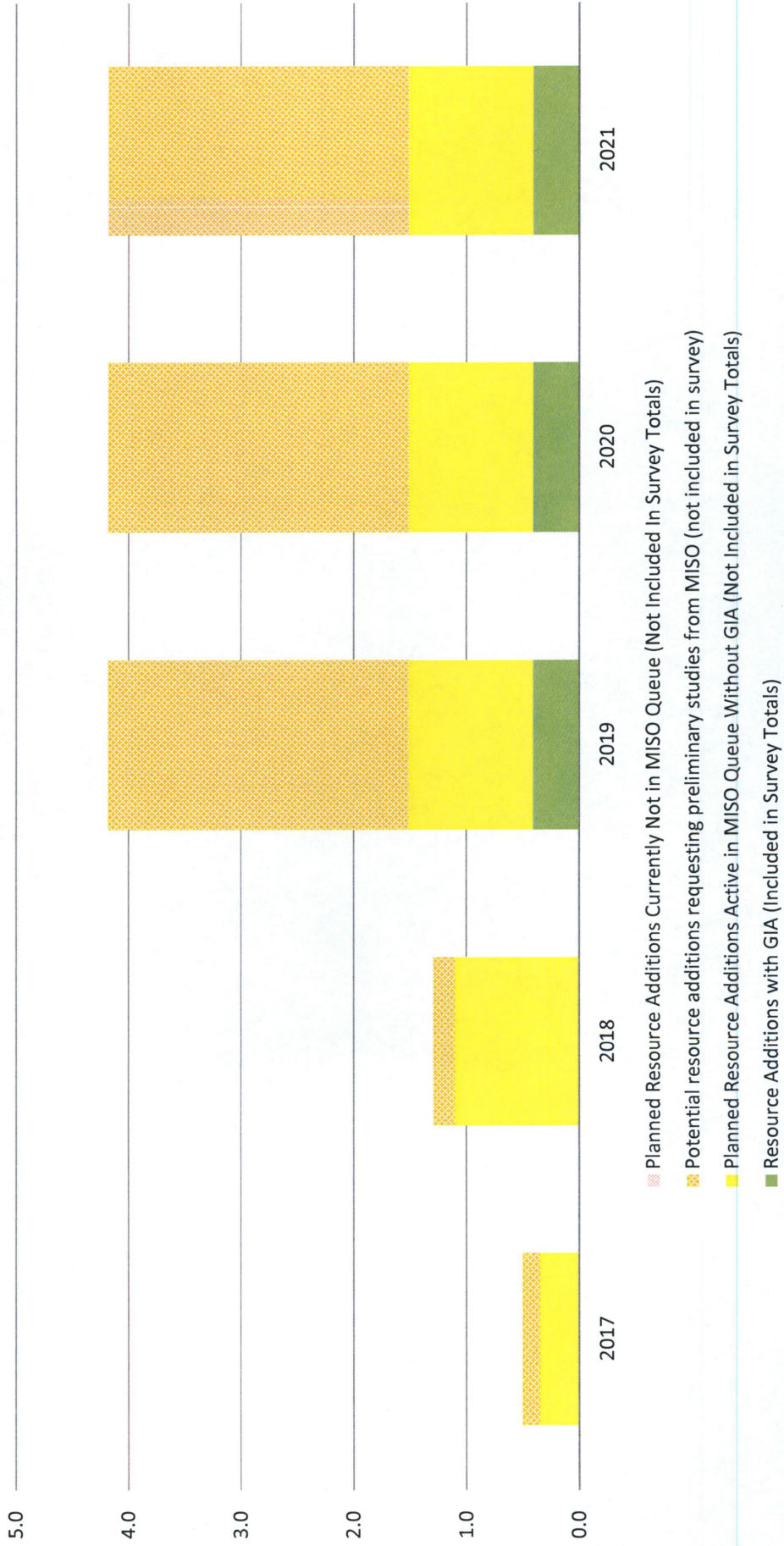
2015 vs 2016 OMS MISO Survey Results

Zone 2

2017 Outlook
Comparison of committed resources
In GW

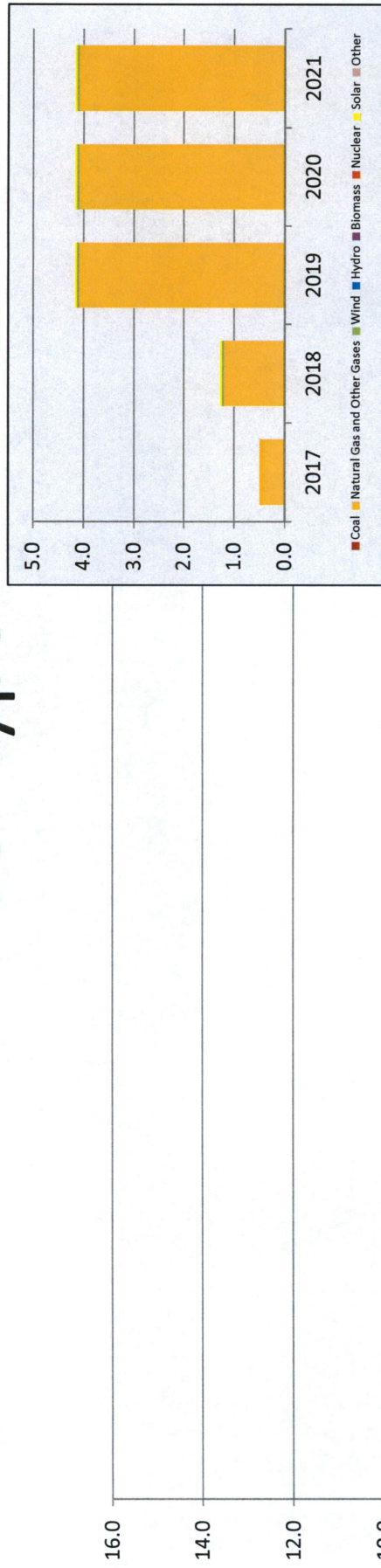


New Generation Reported in Survey Zone 2 (GW)



* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

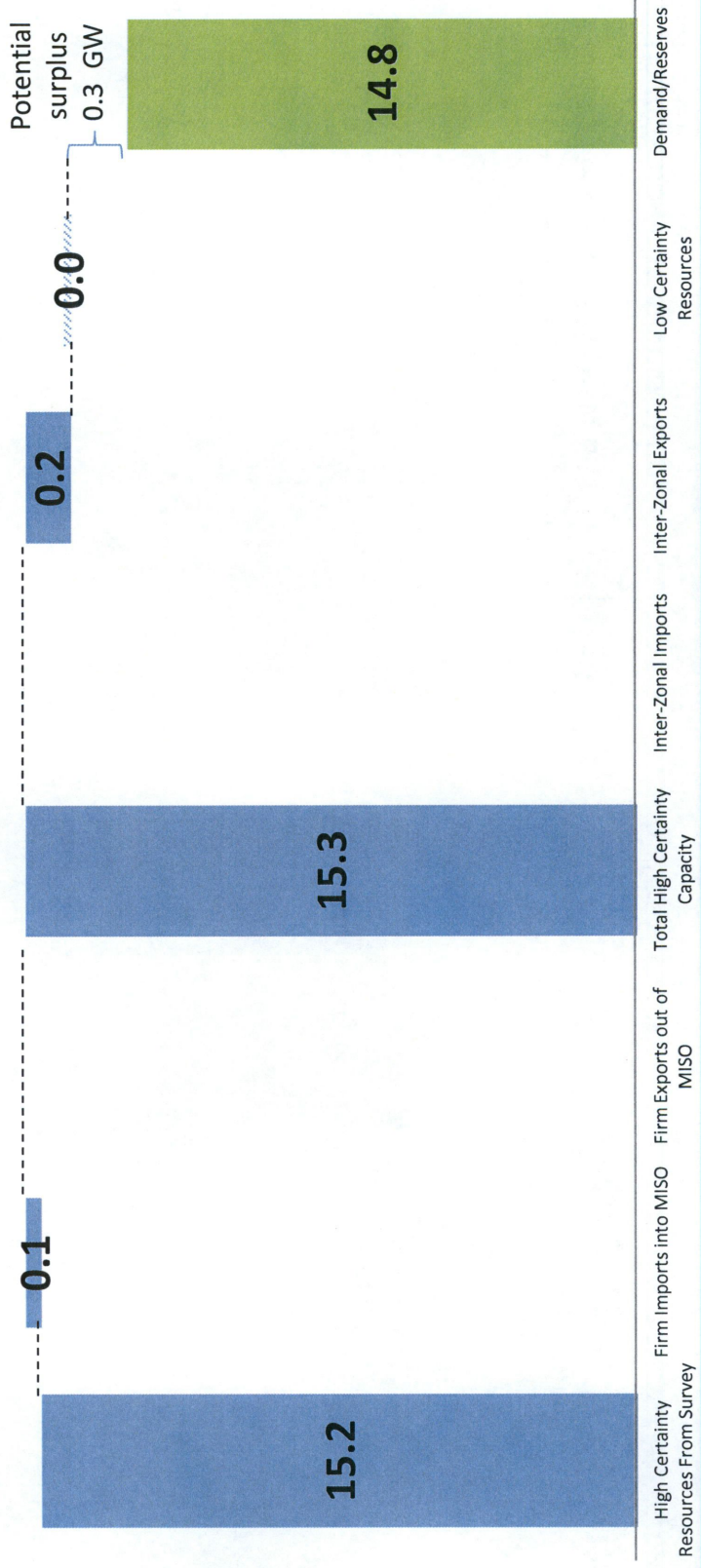
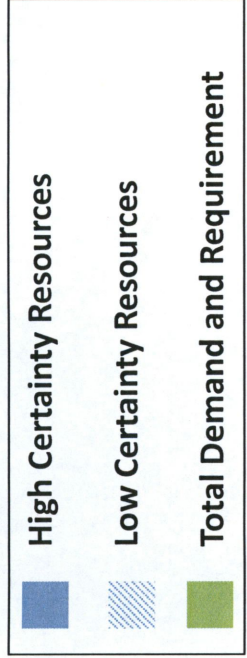
Zone 2 Reported New Resources by Fuel Type



2021 Resource Adequacy Forecast Zone 2 (GW)

2016 OMS MISO Survey

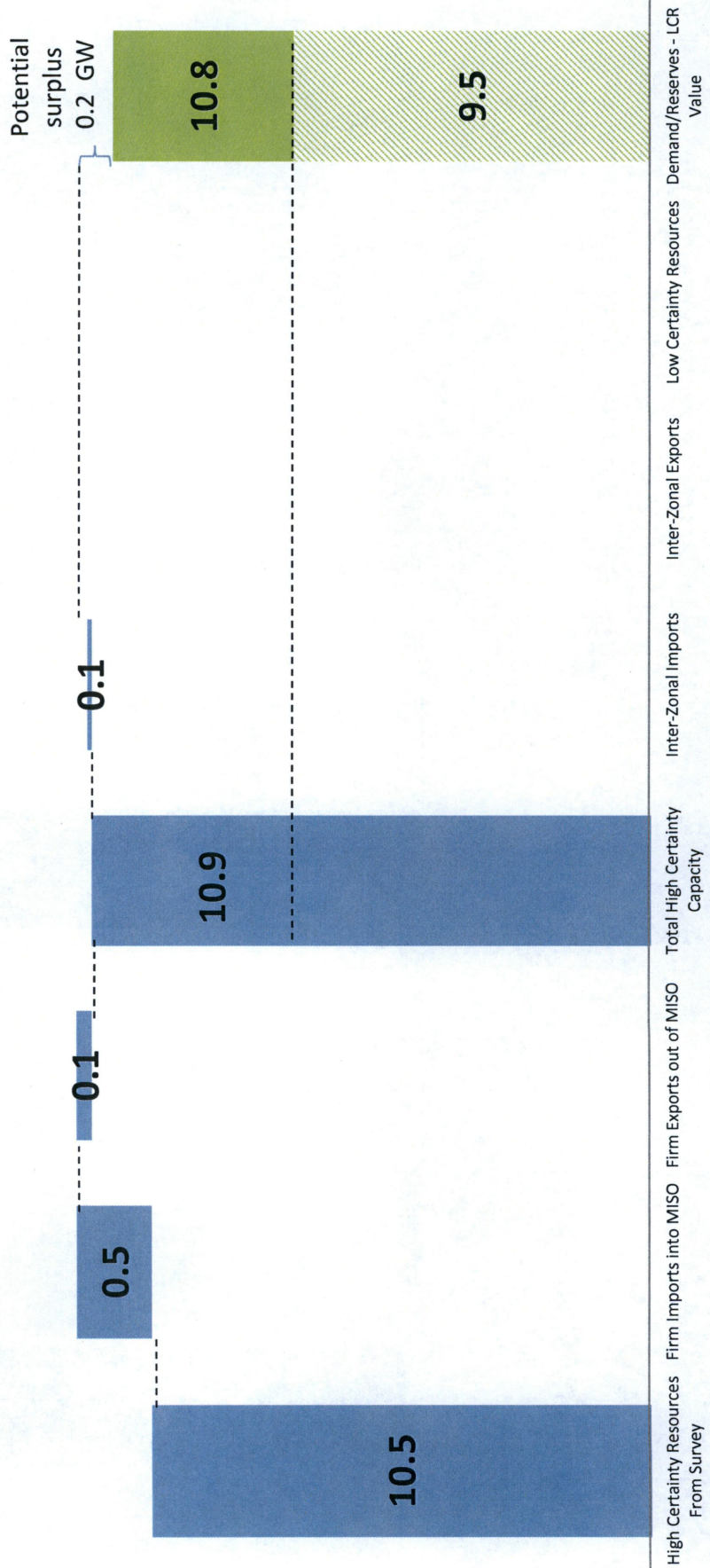
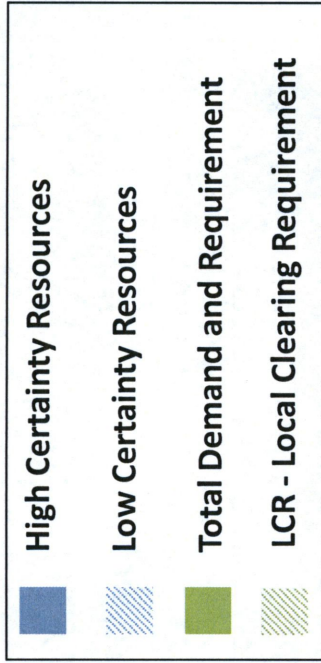
June 2016
In GW



Values in Installed Capacity (ICAP)

2017 Resource Adequacy Forecast Zone 3 (GW)

2016 OMS MISO Survey
June 2016
In GW



Values in Installed Capacity (ICAP)



2018 - 2020 Resource Adequacy Forecast Zone 3 (GW)

2016 OMS MISO Survey

June 2016

Values In GW

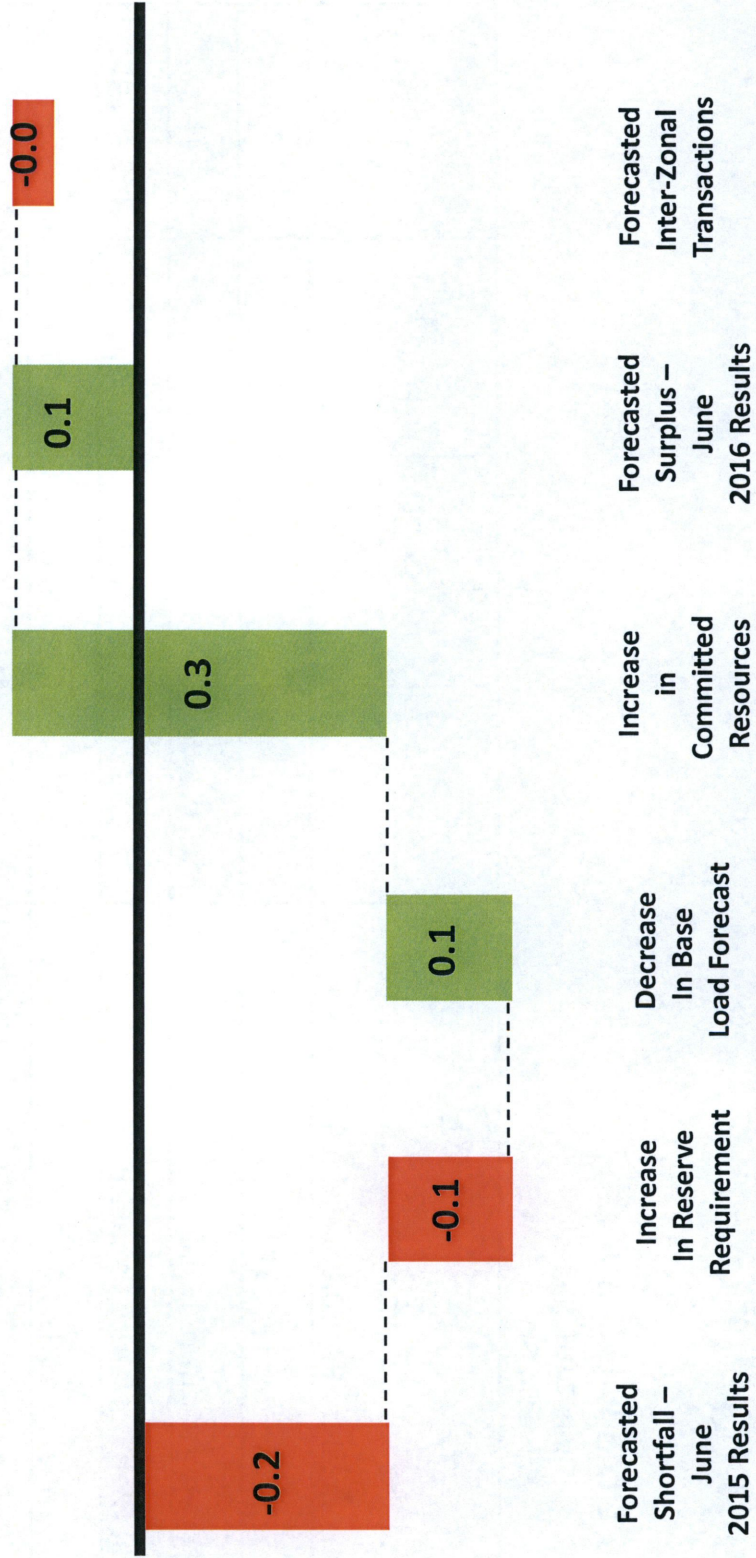
Zone 3	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	10.1	10.0	10.1	A
Firm Imports into MISO	0.5	0.5	0.5	B
Firm Exports out of MISO	0.1	0.1	0.1	C
Total High Certainty Capacity	10.5	10.4	10.5	D = (A+B)-C
Inter-Zonal Imports	0.0	0.0	0.0	E
Inter-Zonal Exports	0.0	0.0	0.0	F
Demand/Reserves	10.8	10.9	11.0	G
Firm Capacity Position	-0.3	-0.4	-0.5	H=(D+E-F)-G
Low Certainty Resources	0.5	0.5	0.6	I
Potential Capacity Surplus/Deficit	0.2	0.1	0.1	J=(H+I)

Values in Installed Capacity (ICAP)

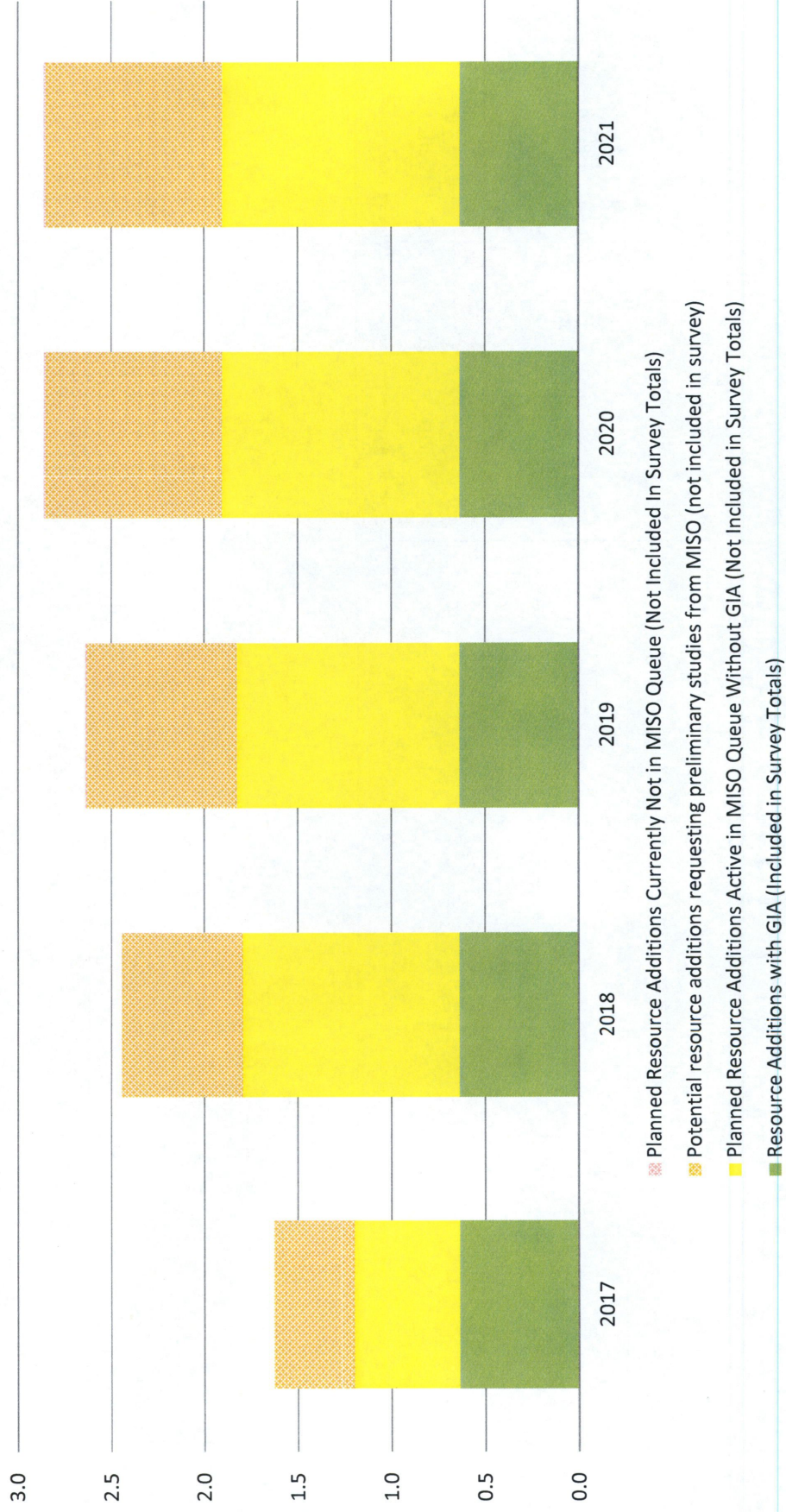
2015 vs 2016 OMS MISO Survey Results

Zone 3

2017 Outlook
Comparison of committed resources
In GW



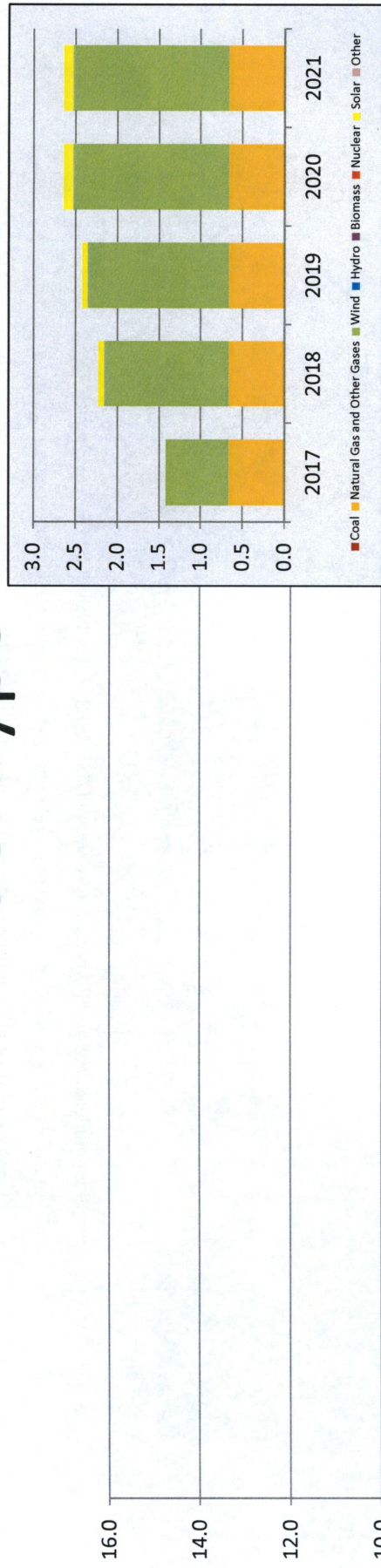
New Generation Reported in Survey Zone 3 (GW)



* Wind at capacity credit of 15.7%; solar at capacity credit of 50%



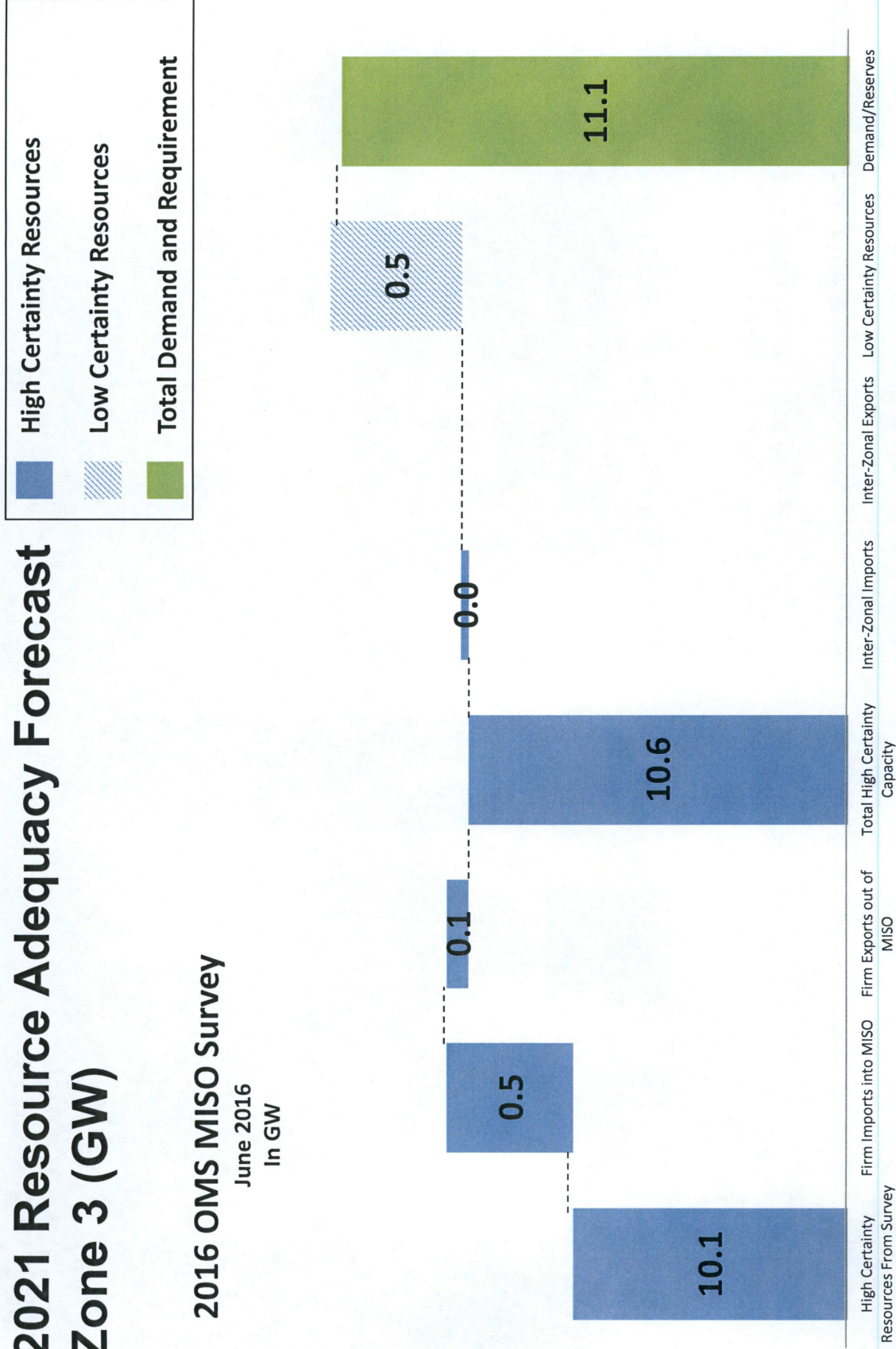
Zone 3 Reported New Resources by Fuel Type



2021 Resource Adequacy Forecast Zone 3 (GW)

2016 OMS MISO Survey

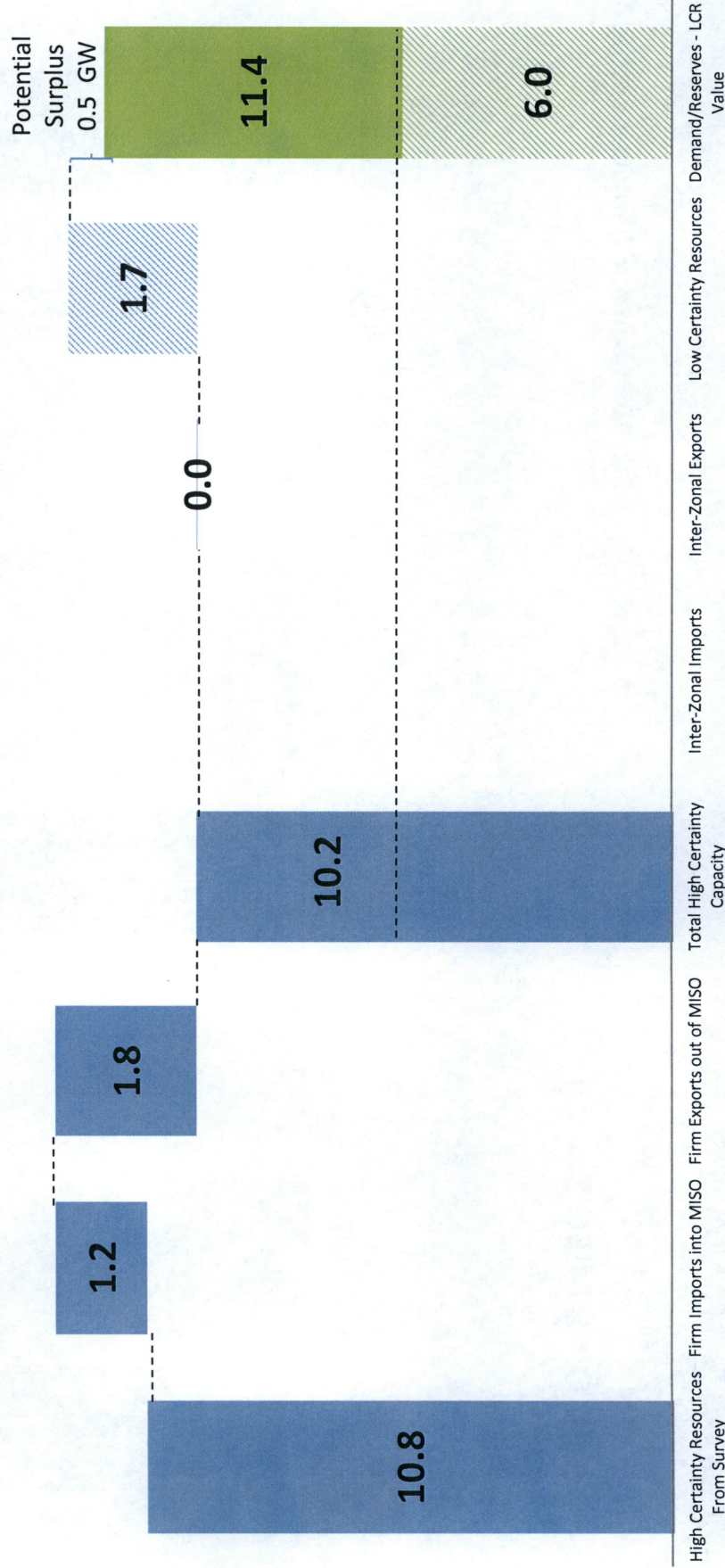
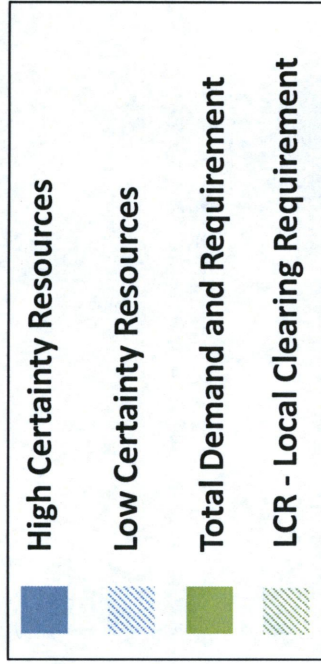
June 2016
In GW



Values in Installed Capacity (ICAP)

2017 Local Resource Adequacy Forecast Zone 4 (GW)

2016 OMS MISO Survey
June 2016
In GW



Values in Installed Capacity (ICAP)

2018 - 2020 Resource Adequacy Forecast Zone 4 (GW)

2016 OMS MISO Survey

June 2016

Values in GW

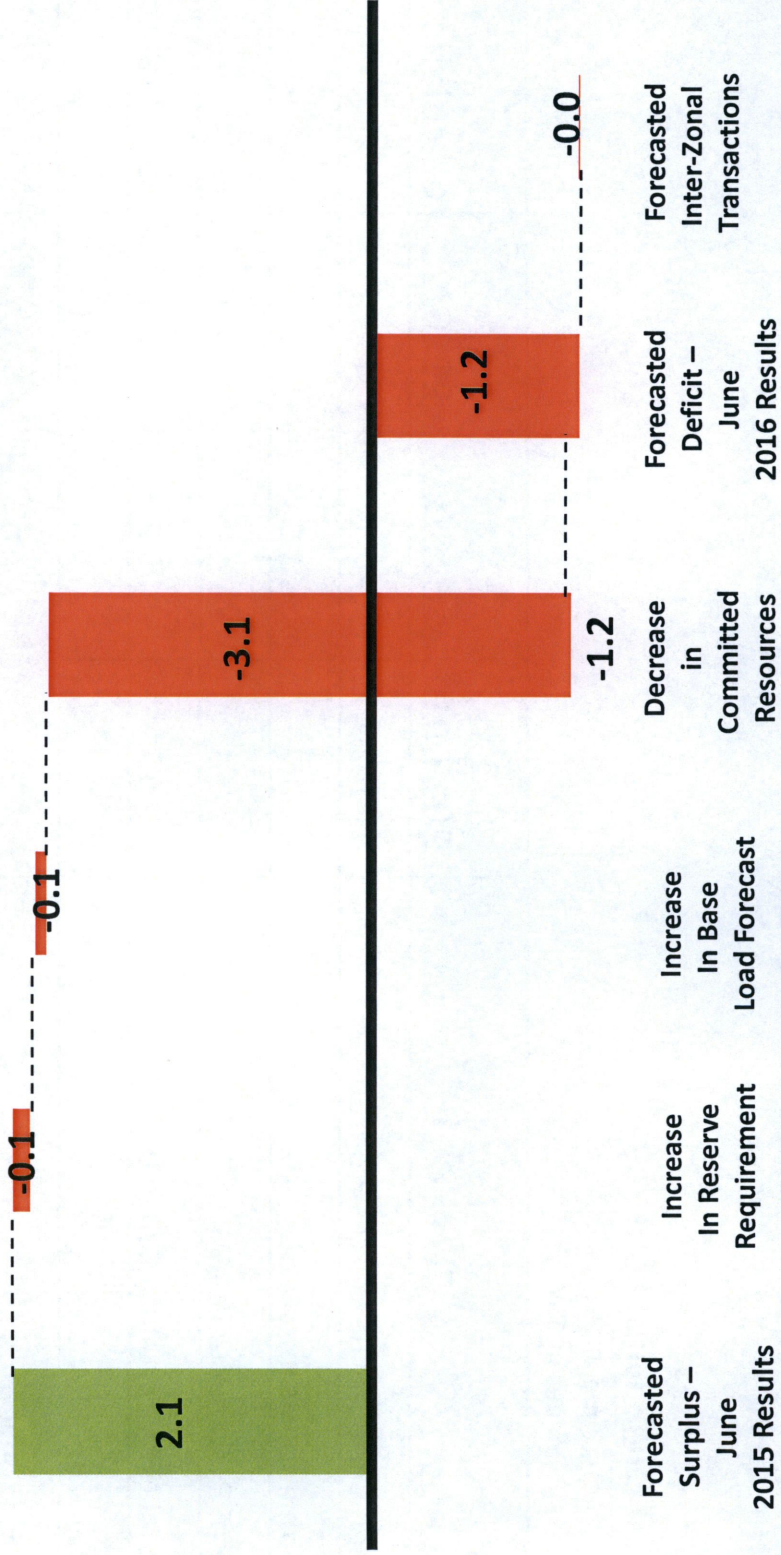
Zone 4	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	10.6	10.6	10.6	A
Firm Imports into MISO	1.2	1.2	1.2	B
Firm Exports out of MISO	2.1	1.9	1.9	C
Total High Certainty Capacity	9.7	9.9	9.9	D = (A+B)-C
Inter-Zonal Imports	0.0	0.0	0.0	E
Inter-Zonal Exports	0.0	0.0	0.0	F
Demand/Reserves	11.2	11.4	11.5	G
Firm Capacity Position	-1.5	-1.5	-1.6	H = (D+E-F)-G
Low Certainty Resources	1.8	1.8	1.8	I
Potential Capacity Surplus/Deficit	0.3	0.3	0.2	J = (H+I)

Values in Installed Capacity (ICAP)

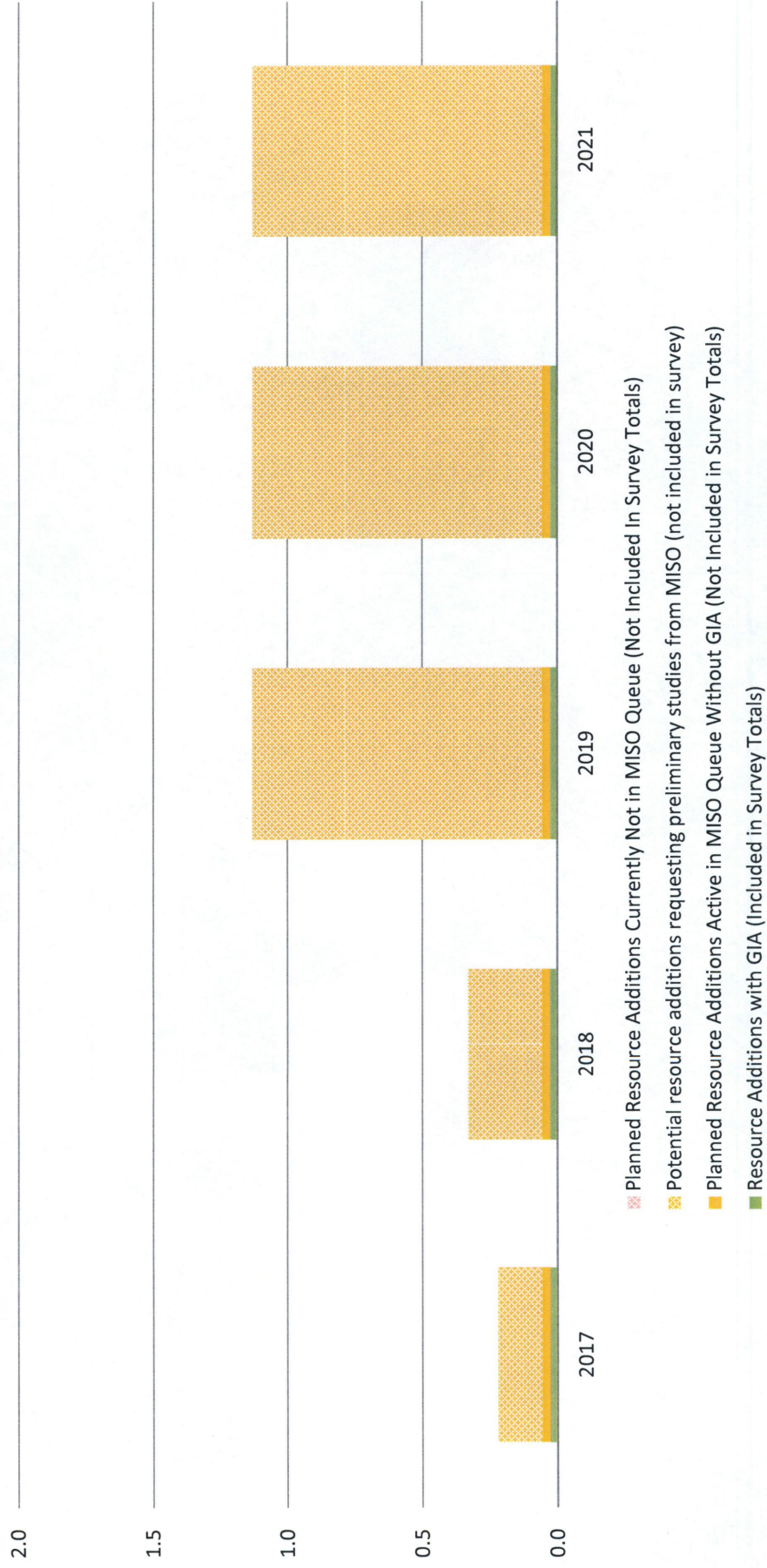
2015 vs 2016 OMS MISO Survey Results

Zone 4

2017 Outlook
 Comparison of committed resources
 In GW

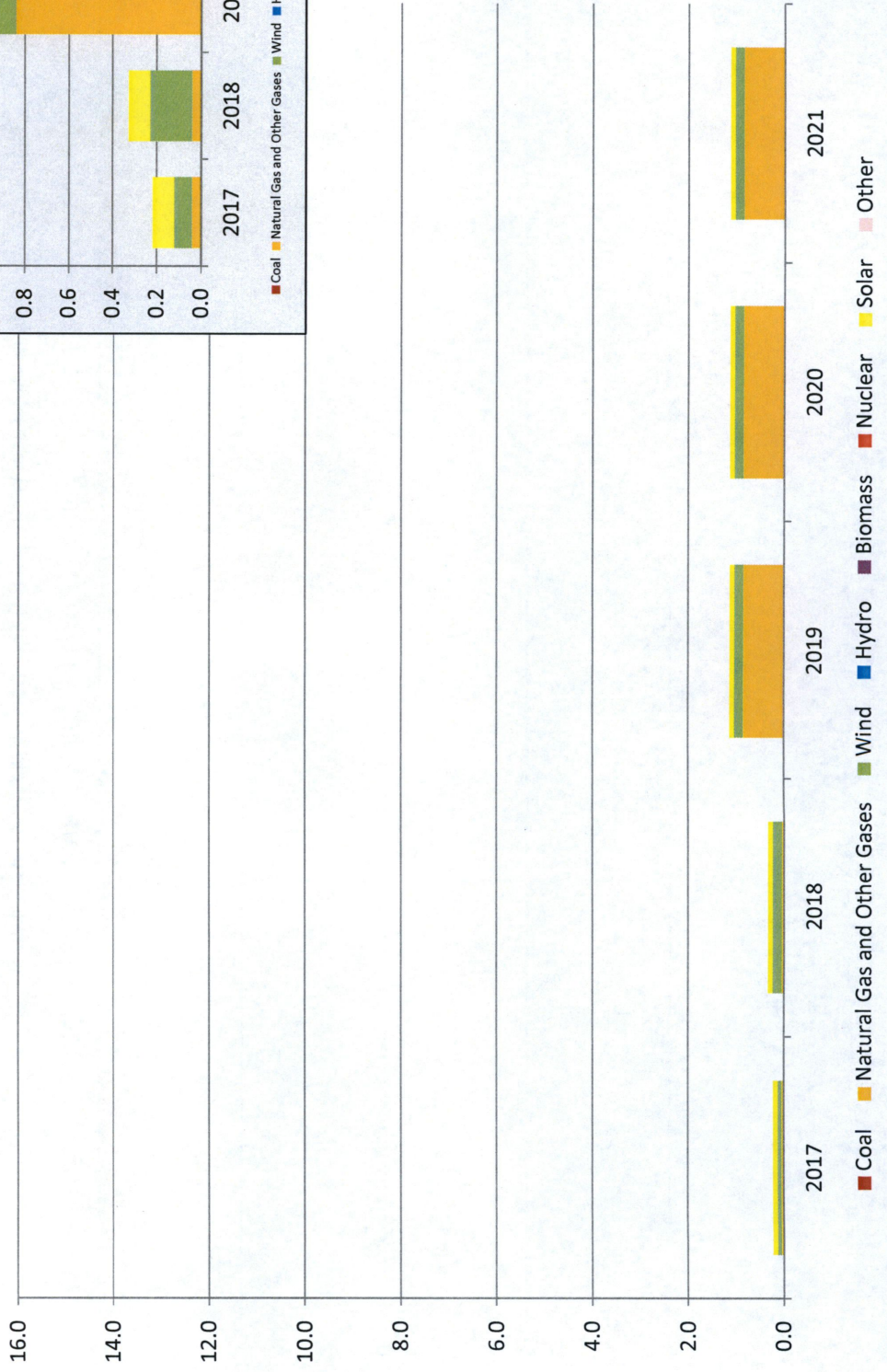
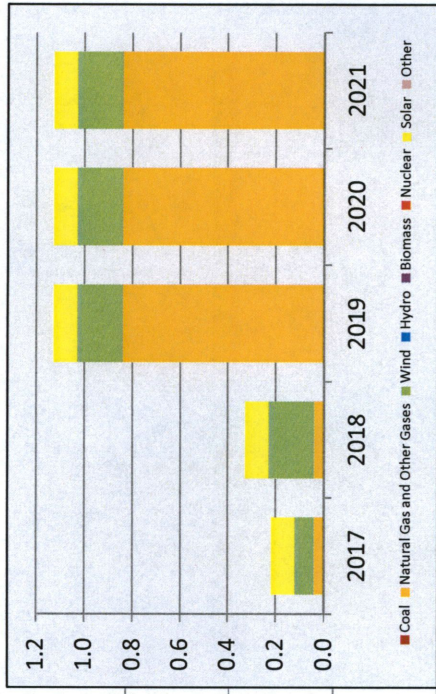


New Generation Reported in Survey Zones 4 (GW)



* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

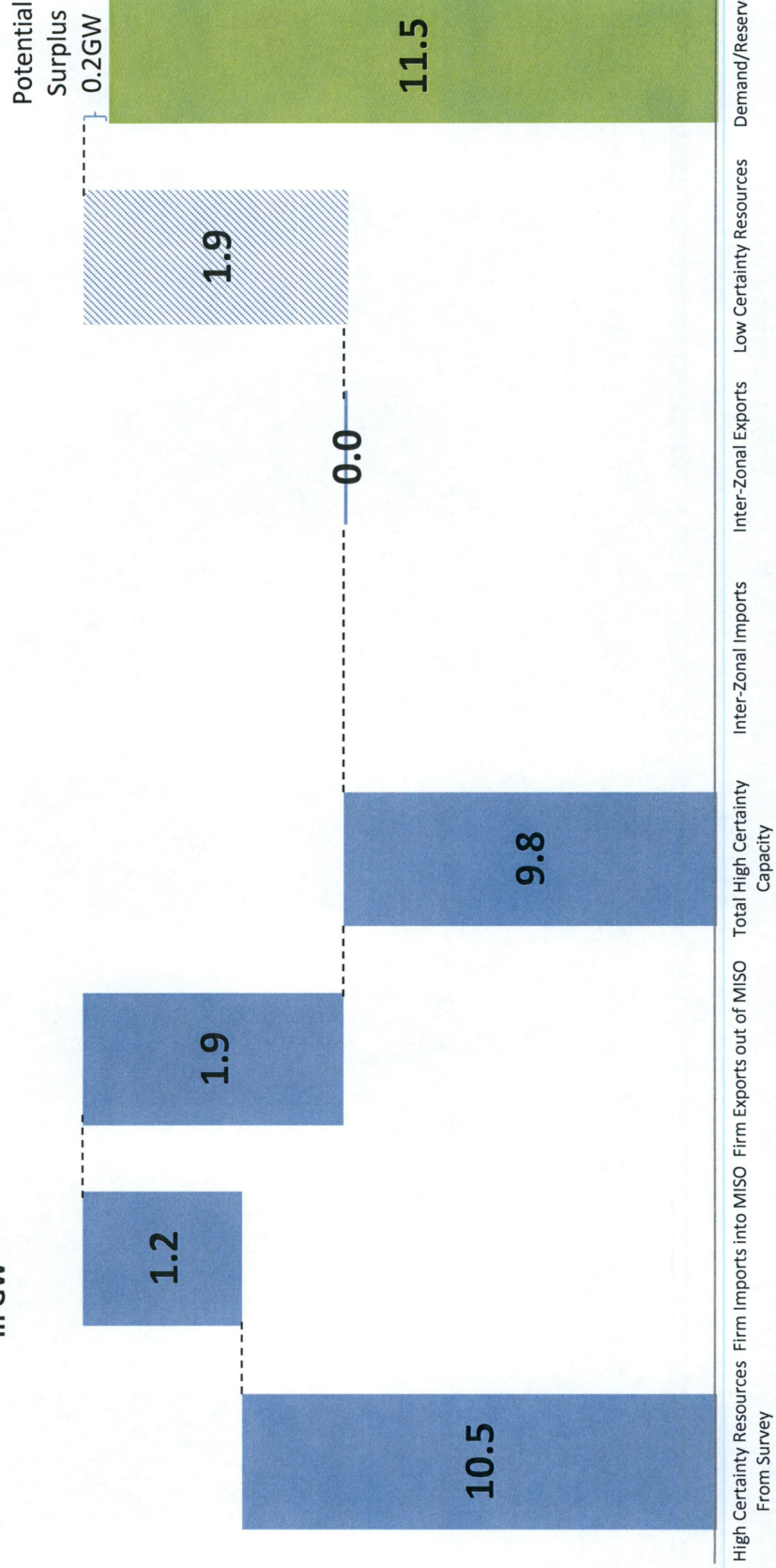
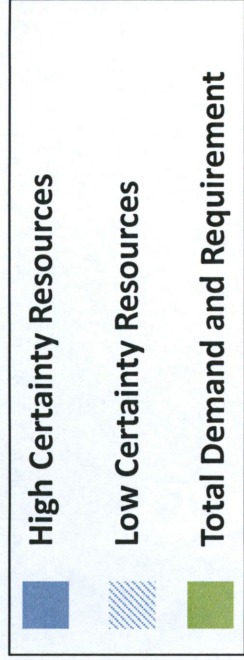
Zone 4 Reported New Resources by Fuel Type



2021 Local Resource Adequacy Forecast Zone 4 (GW)

2016 OMS MISO Survey

June 2016
In GW

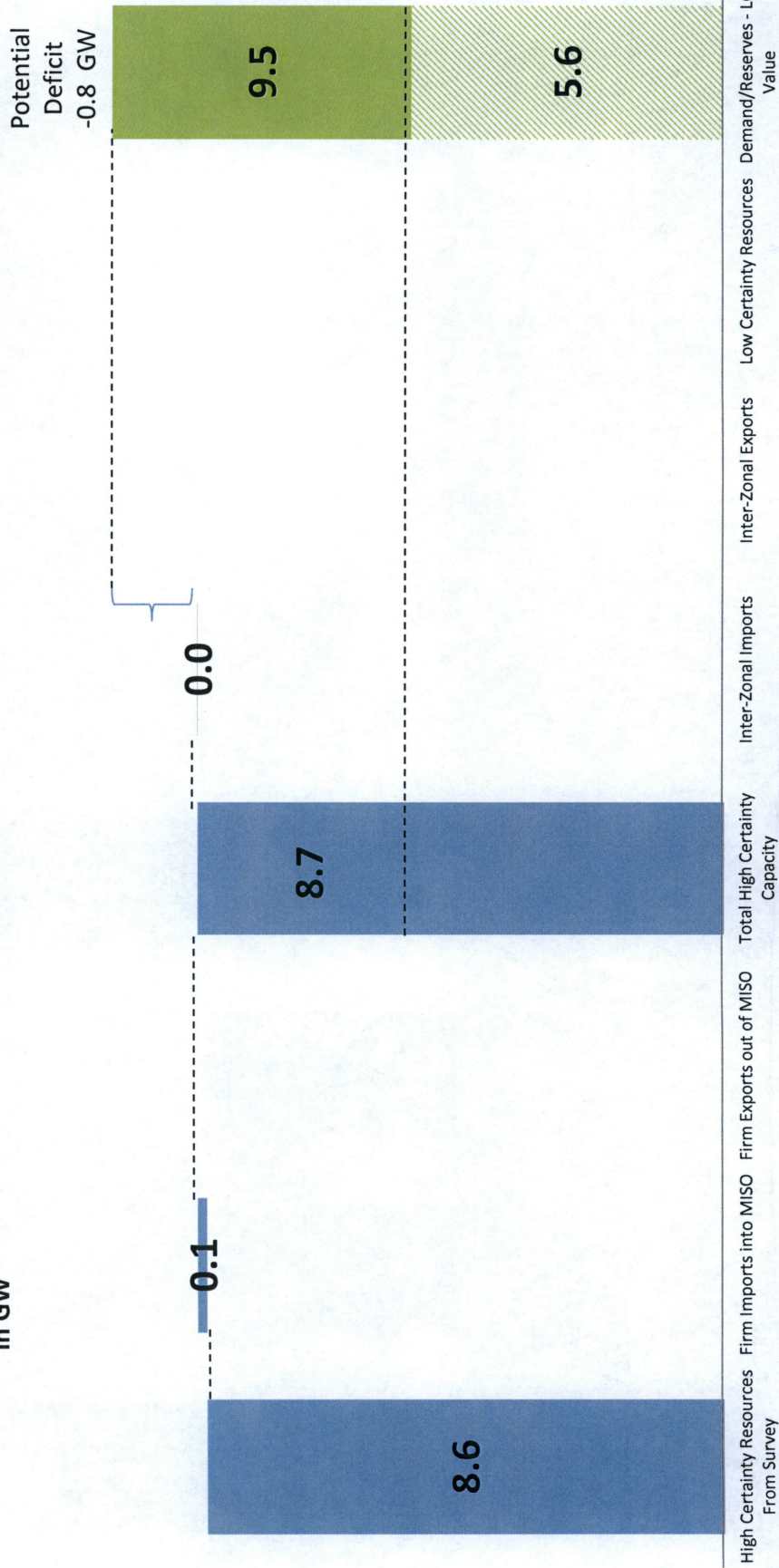
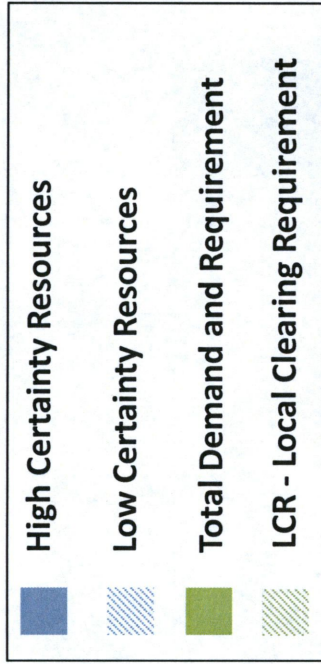


Values in Installed Capacity (ICAP)



2017 Local Resource Adequacy Forecast Zone 5 (GW)

2016 OMS MISO Survey
June 2016
In GW



Values in Installed Capacity (ICAP)

Ameren Missouri owns/operates resources in Illinois (zone 4) that will be used to serve Missouri load (zone 5)."



2018 - 2020 Resource Adequacy Forecast Zone 5 (GW)

2016 OMS MISO Survey

June 2016

Values In GW

Zone 5	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	8.5	8.5	8.5	A
Firm Imports into MISO	0.1	0.1	0.1	B
Firm Exports out of MISO	0.0	0.0	0.0	C
Total High Certainty Capacity	8.6	8.6	8.6	D = (A+B)-C
Inter-Zonal Imports	0.0	0.0	0.0	E
Inter-Zonal Exports	0.0	0.0	0.0	F
Demand/Reserves	9.7	9.7	9.7	G
Firm Capacity Position	-1.1	-1.1	-1.1	H = (D+E-F)-G
Low Certainty Resources	0.0	0.0	0.0	I
Potential Capacity Surplus/Deficit	-1.1	-1.1	-1.1	J = (H+I)

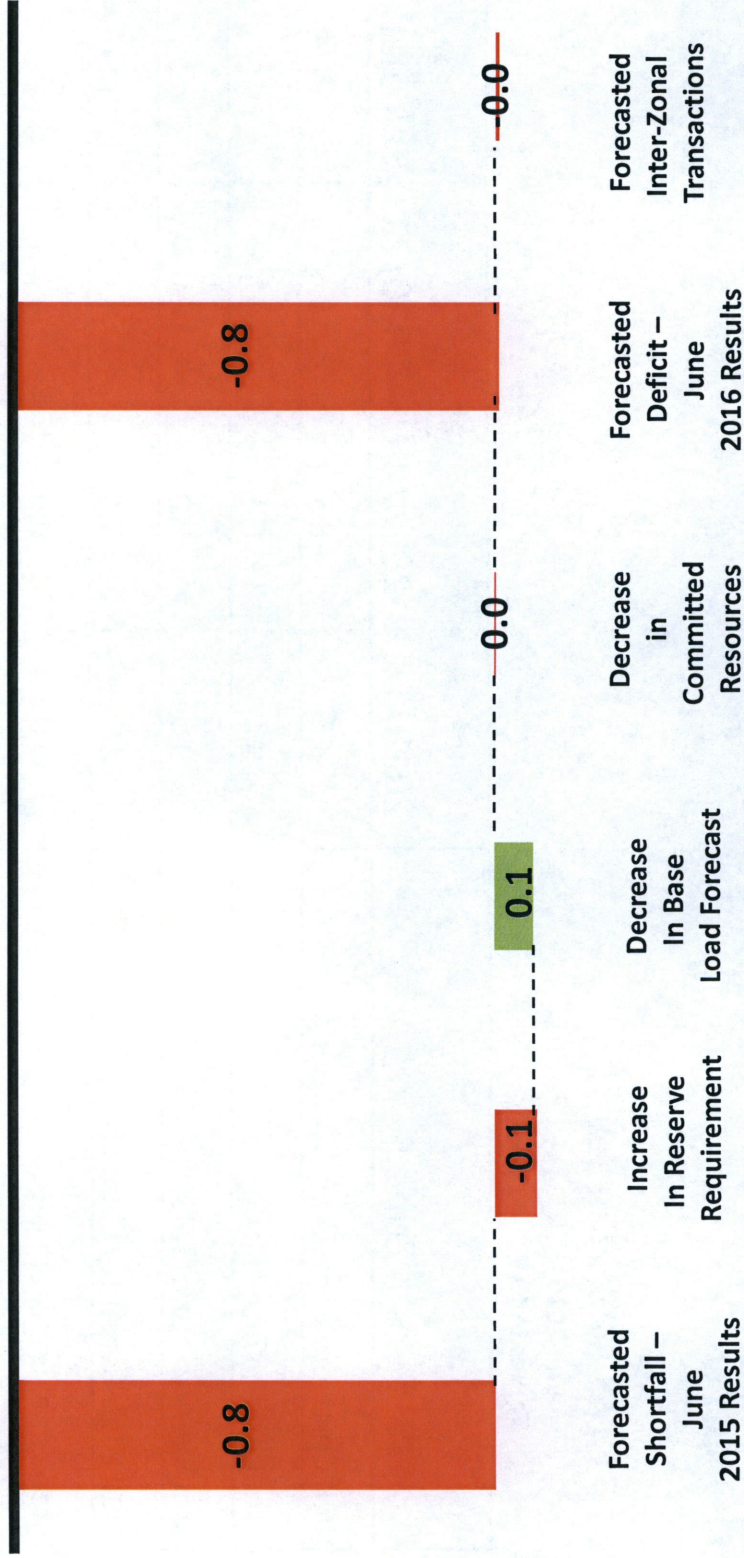
Values in Installed Capacity (ICAP)

Ameren Missouri owns/operates resources in Illinois (zone 4) that will be used to serve Missouri load (zone 5)."



2015 vs 2016 OMS MISO Survey Results Zone 5

2017 Outlook
Comparison of committed resources
In GW

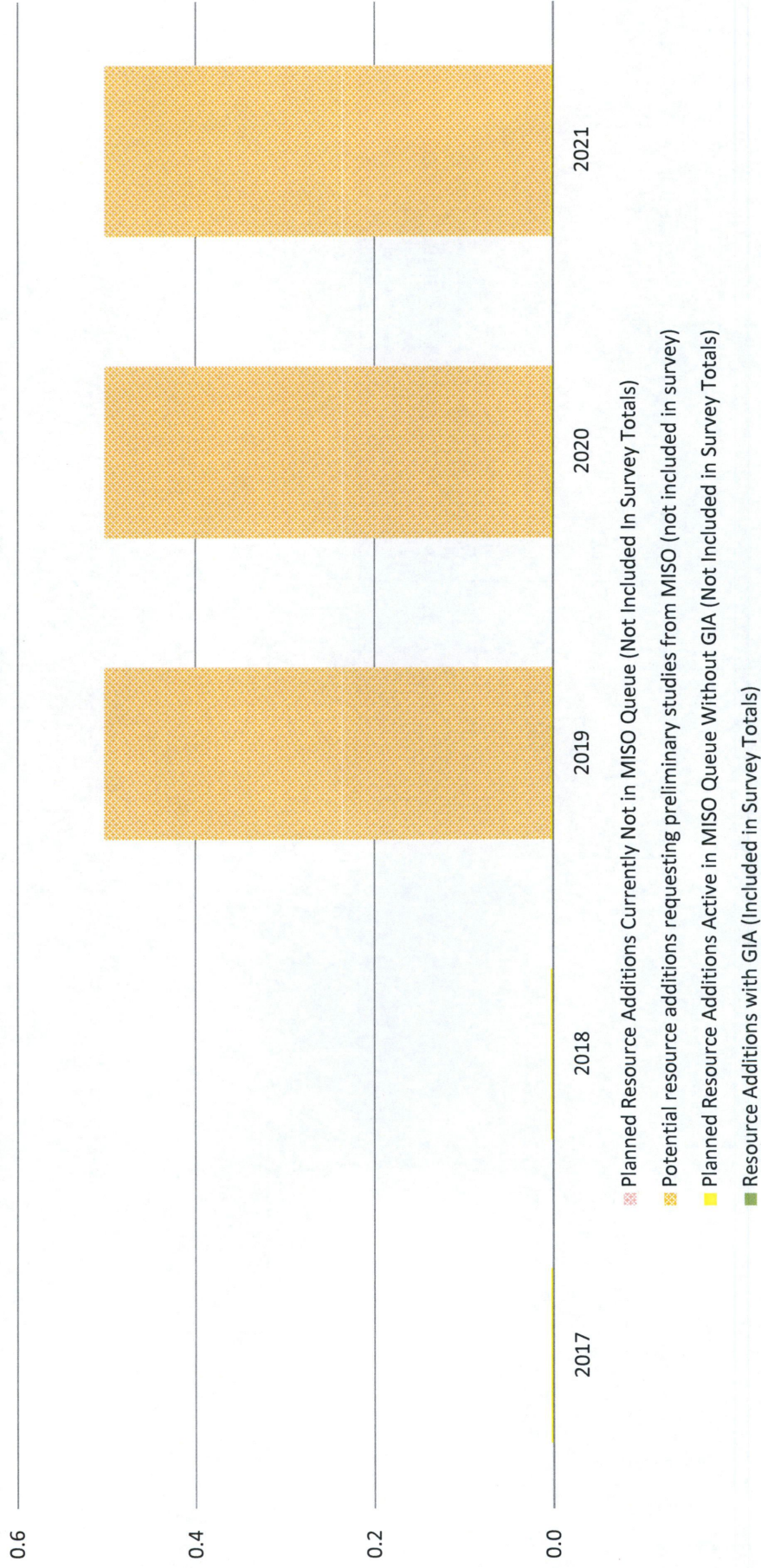


Values in Installed Capacity (ICAP)

Ameren Missouri owns/operates resources in Illinois (zone 4) that will be used to serve Missouri load (zone 5)."



New Generation Reported in Survey Zones 5 (GW)



* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

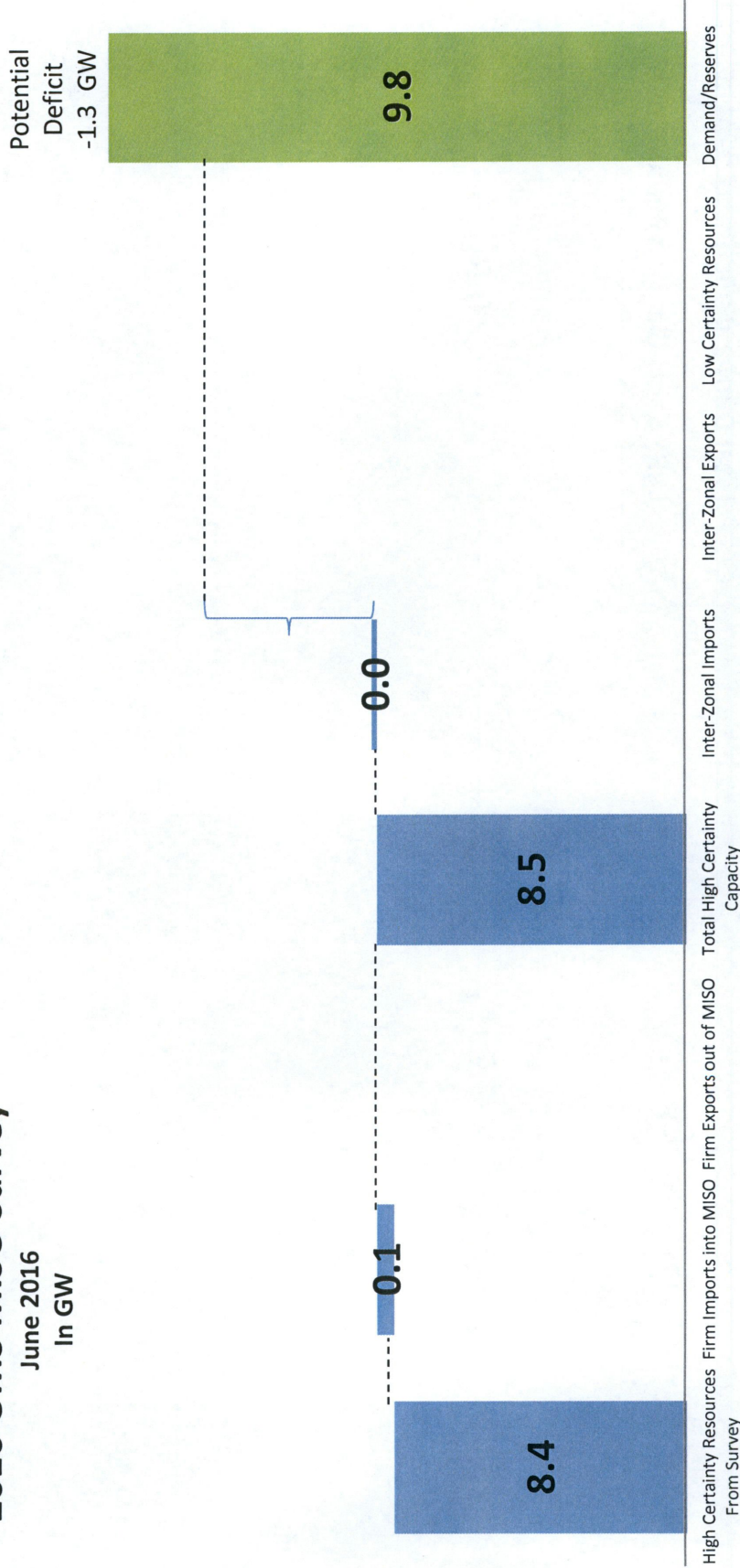
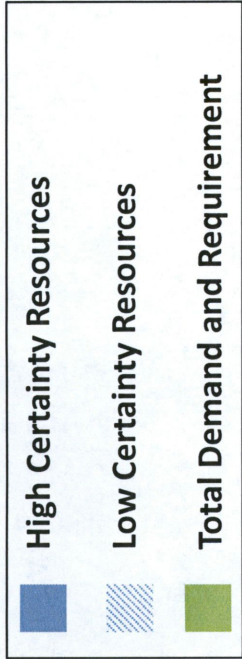
Zone 5 Reported New Resources by Fuel Type



2021 Local Resource Adequacy Forecast Zone 5 (GW)

2016 OMS MISO Survey

June 2016
In GW



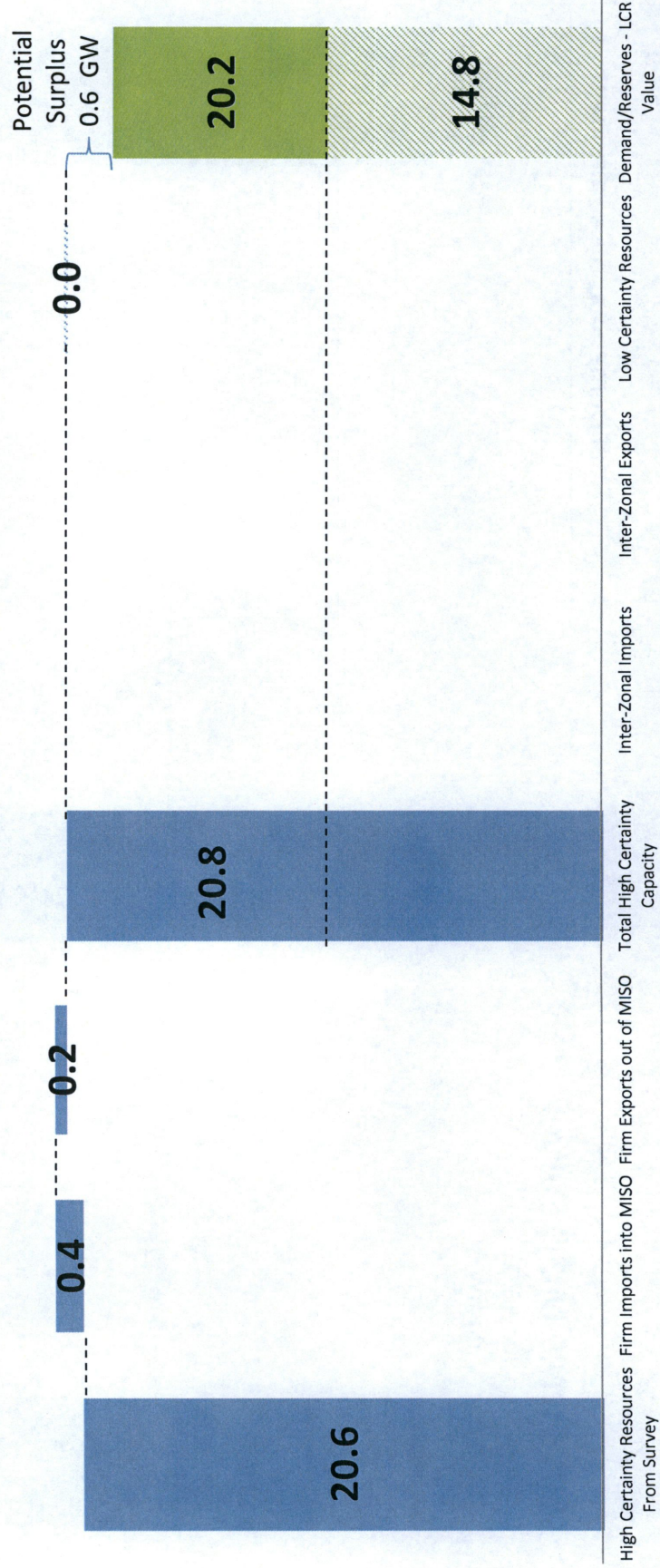
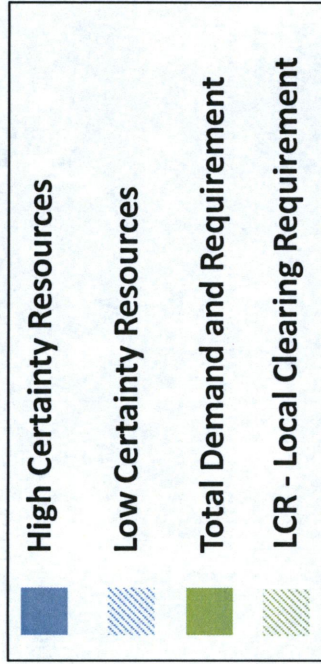
Values in Installed Capacity (ICAP)

Ameren Missouri owns/operates resources in Illinois (zone 4) that will be used to serve Missouri load (zone 5)."



2017 Resource Adequacy Forecast Zone 6 (GW)

2016 OMS MISO Survey
June 2016
In GW



High Certainty Resources From Survey Firm Imports into MISO Firm Exports out of MISO Total High Certainty Capacity Inter-Zonal Imports Inter-Zonal Exports Low Certainty Resources Demand/Reserves - LCR Value

Values in Installed Capacity (ICAP)



2018 - 2020 Resource Adequacy Forecast Zone 6 (GW)

2016 OMS MISO Survey

June 2016

Values In GW

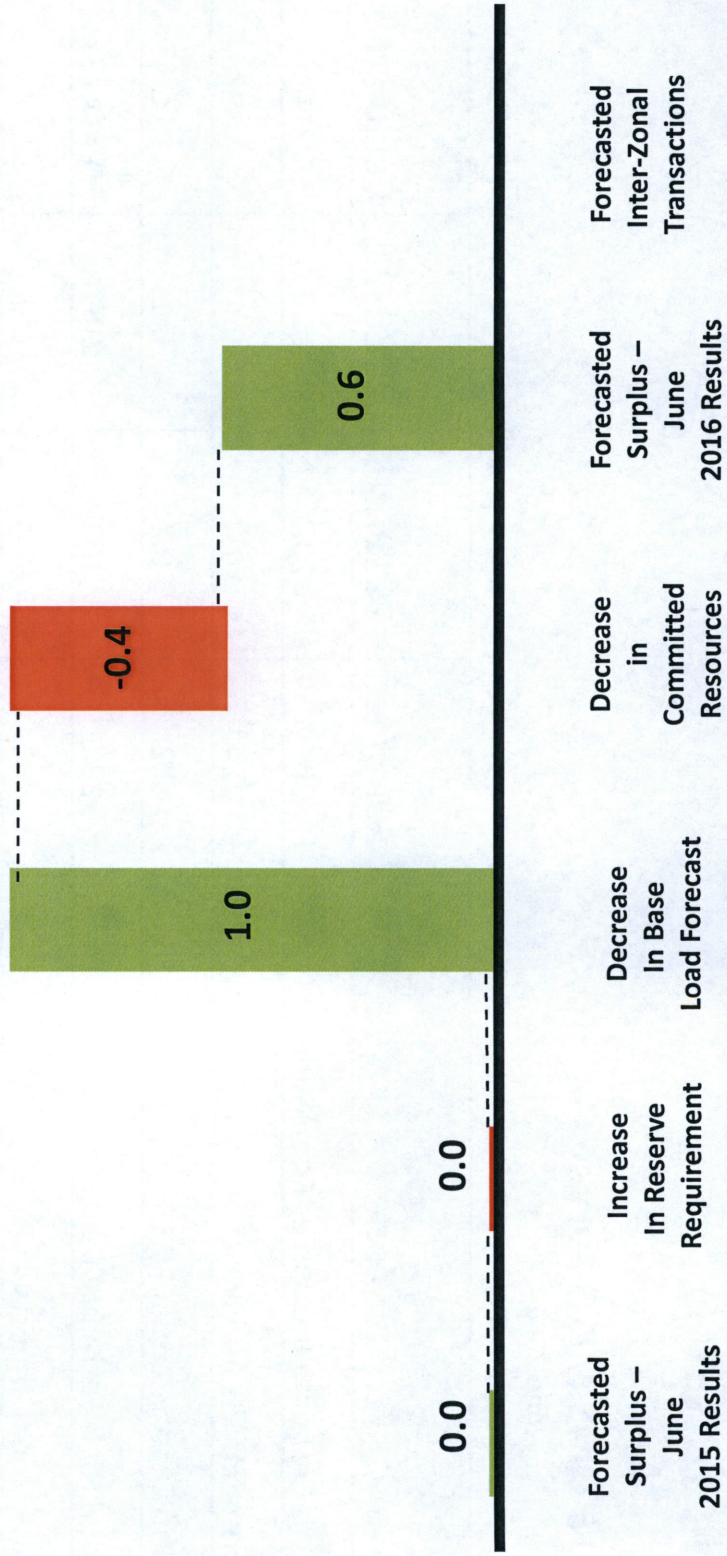
Zone 6	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	20.3	20.1	20.0	A
Firm Imports into MISO	0.4	0.4	0.4	B
Firm Exports out of MISO	0.2	0.2	0.1	C
Total High Certainty Capacity	20.5	20.3	20.3	D = (A+B)-C
Inter-Zonal Imports	0.0	0.0	0.0	E
Inter-Zonal Exports	0.0	0.0	0.0	F
Demand/Reserves	20.3	20.5	20.8	G
Firm Capacity Position	0.2	-0.3	-0.5	H = (D+E-F)-G
Low Certainty Resources	0.2	0.5	0.5	I
Potential Capacity Surplus/Deficit	0.4	0.2	0.0	J = (H+I)

Values in Installed Capacity (ICAP)

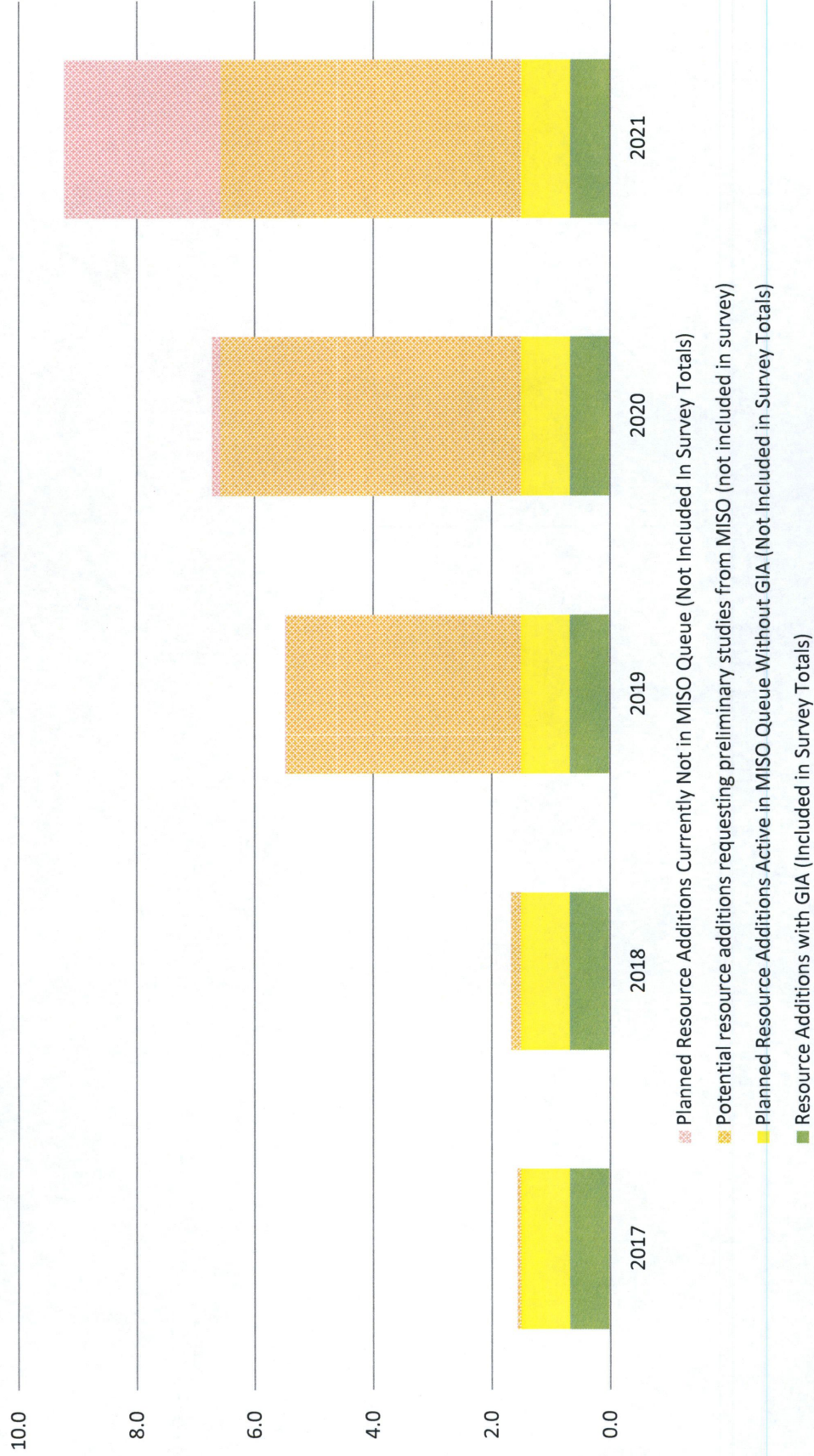
2015 vs 2016 OMS MISO Survey Results

Zone 6

2017 Outlook
Comparison of committed resources
In GW

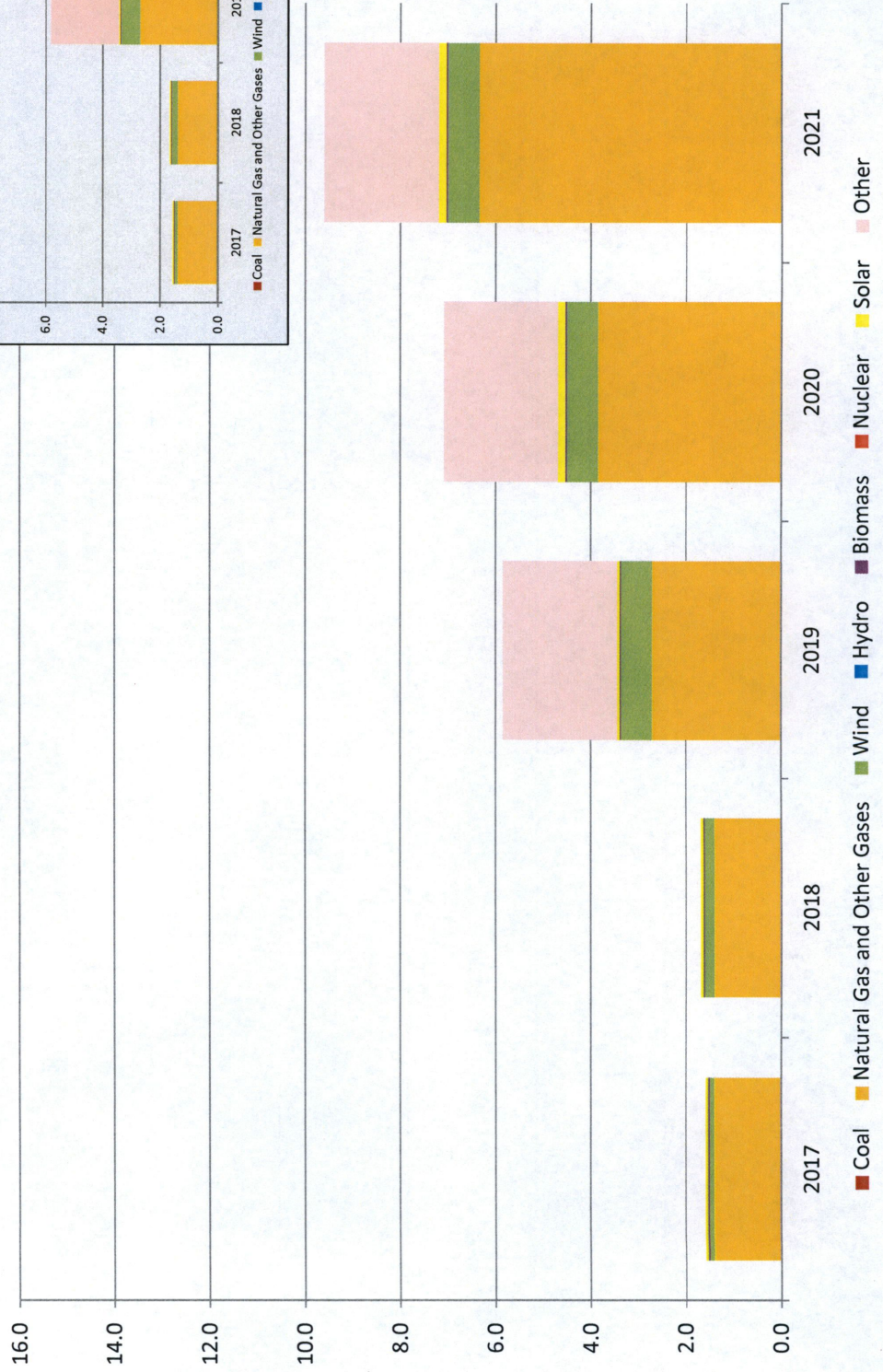
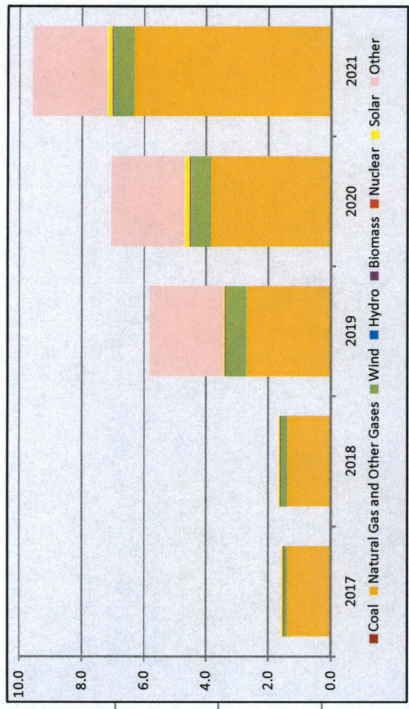


New Generation Reported in Survey Zone 6 (GW)



* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

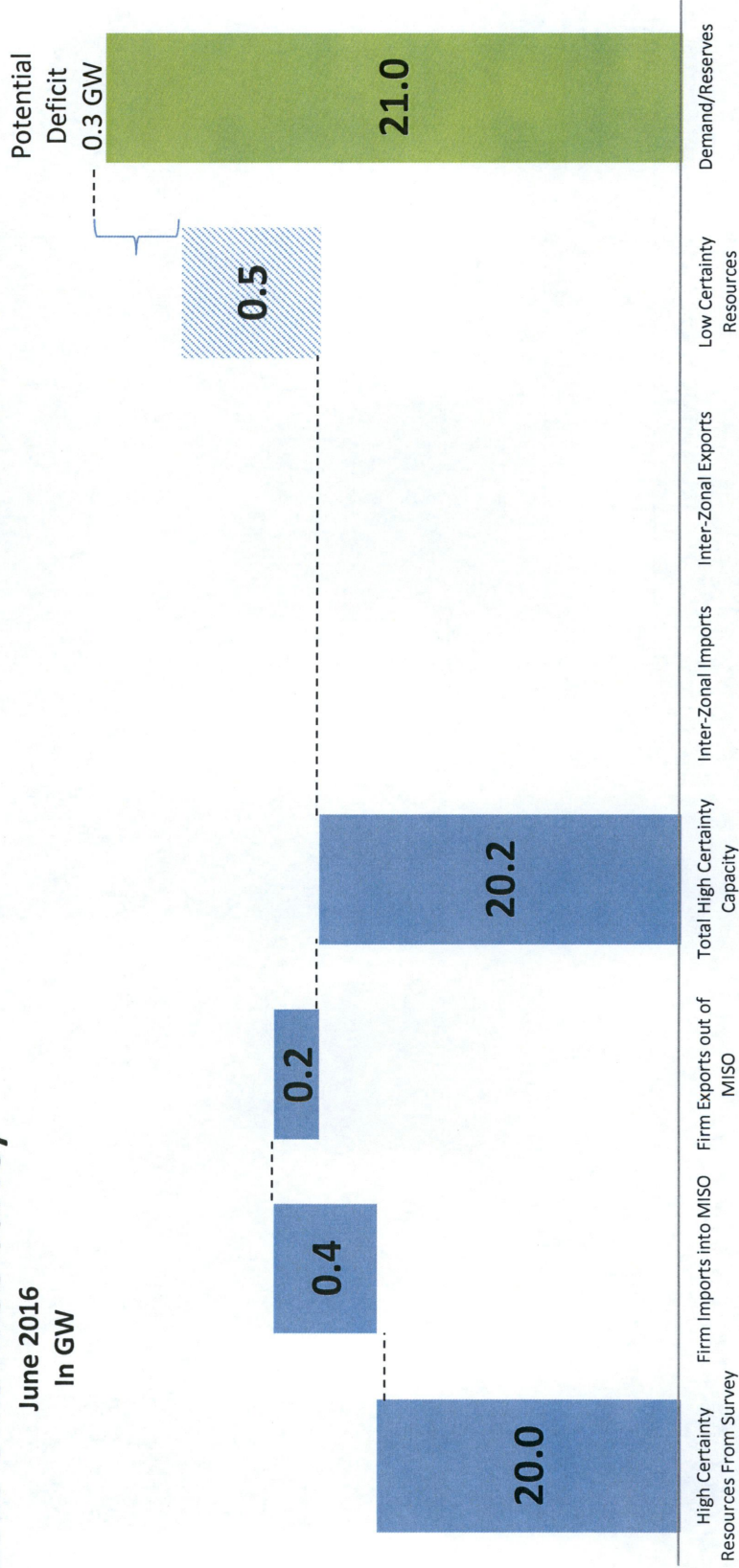
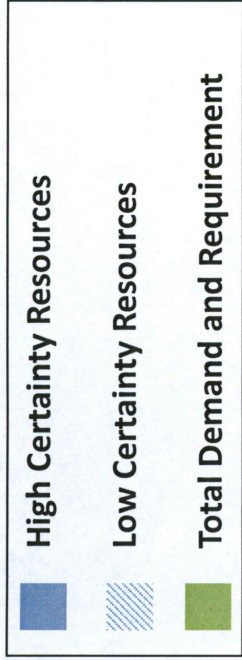
Zone 6 Reported New Resources by Fuel Type



2021 Resource Adequacy Forecast Zone 6 (GW)

2016 OMS MISO Survey

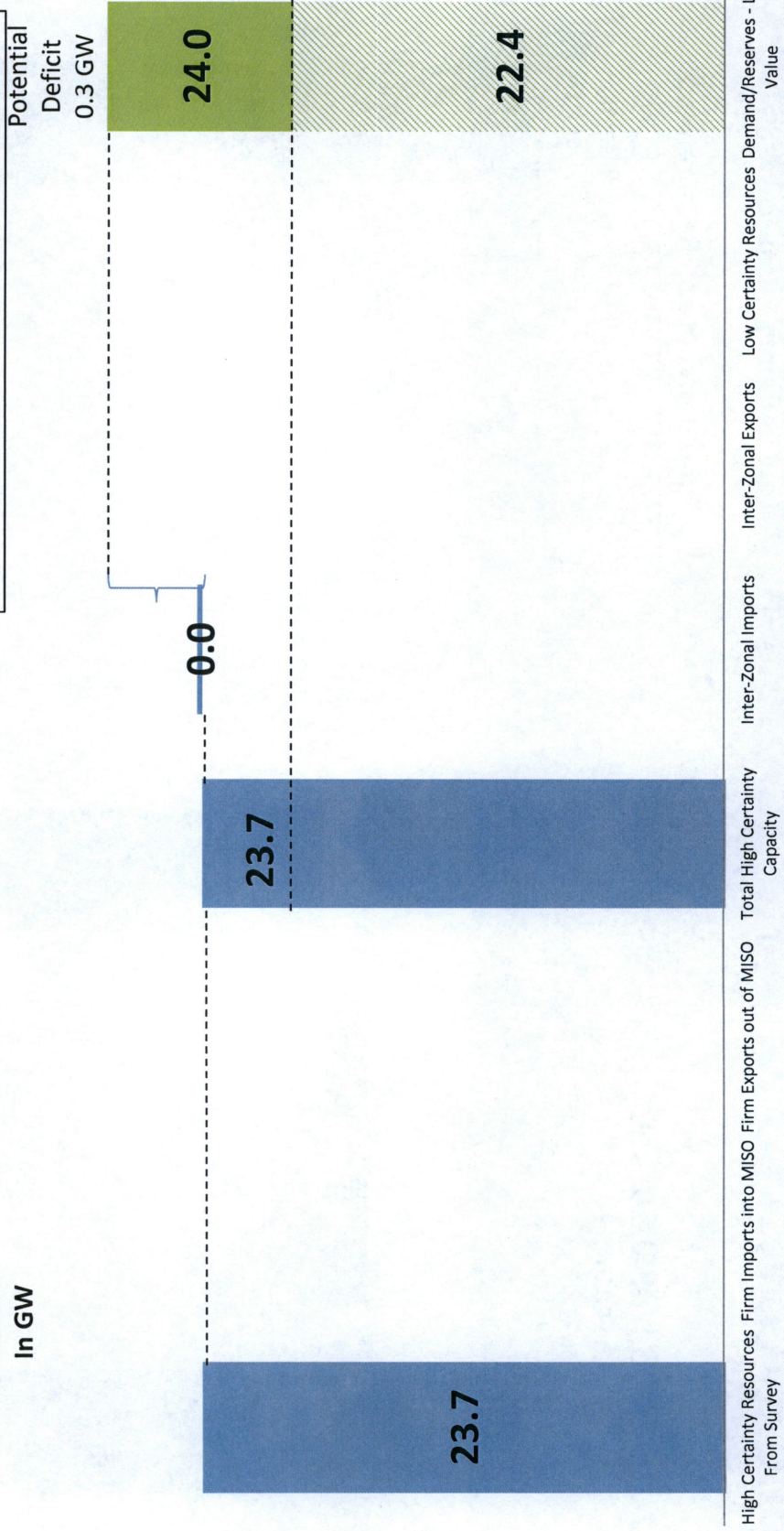
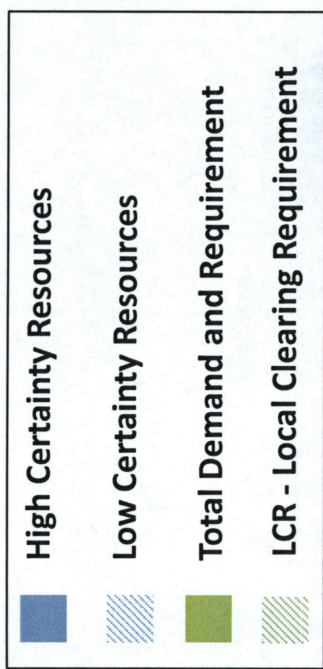
June 2016
In GW



Values in Installed Capacity (ICAP)

2017 Resource Adequacy Forecast Zone 7 (GW)

2016 OMS MISO Survey
June 2016
In GW



Values in Installed Capacity (ICAP)



2018 - 2020 Resource Adequacy Forecast Zone 7 (GW)

2016 OMS MISO Survey

June 2016

Values in GW

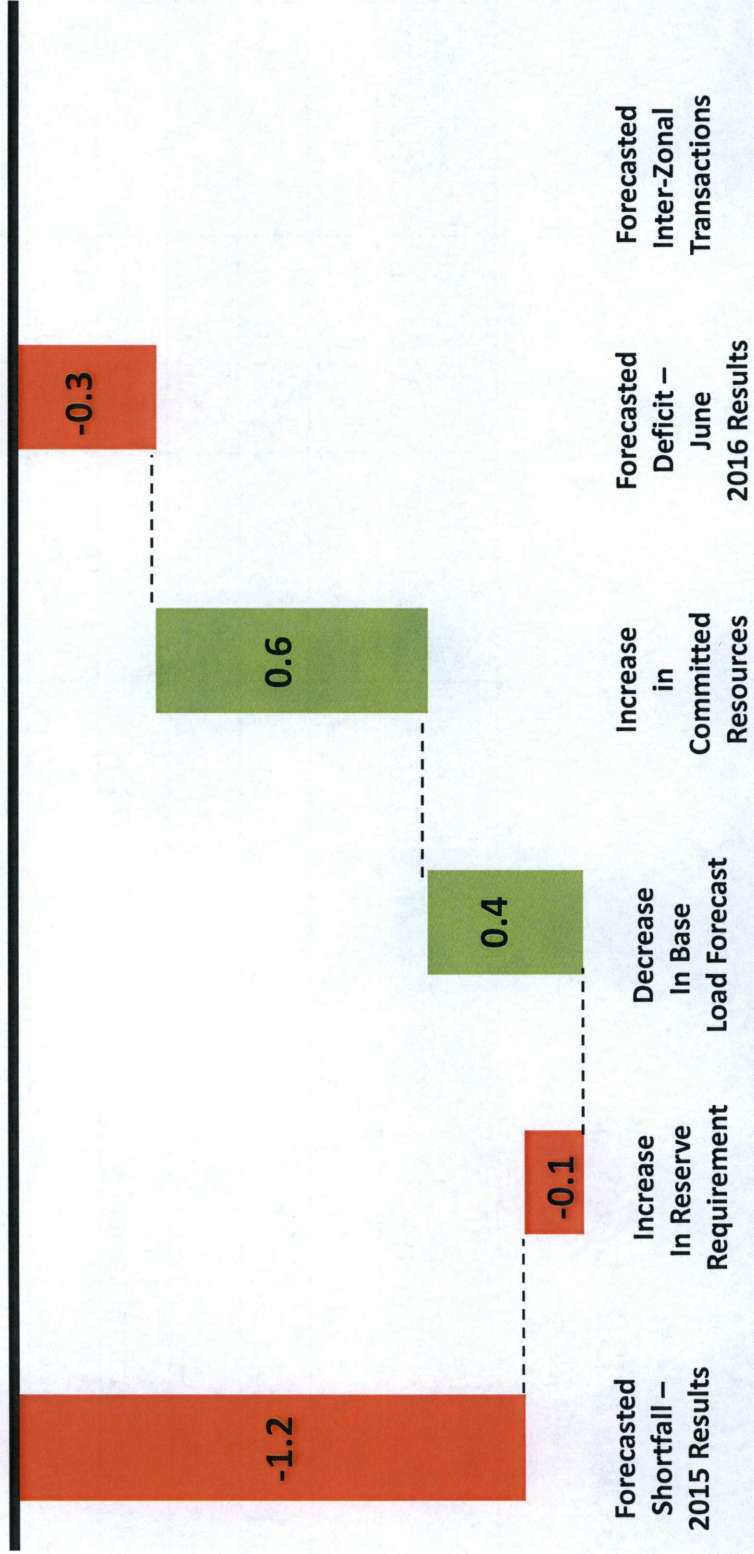
Zone 7	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	23.7	23.8	23.5	A
Firm Imports into MISO	0.0	0.0	0.0	B
Firm Exports out of MISO	0.0	0.0	0.0	C
Total High Certainty Capacity	23.7	23.8	23.5	D = (A+B)-C
Inter-Zonal Imports	0.0	0.0	0.0	E
Inter-Zonal Exports	0.0	0.0	0.0	F
Demand/Reserves	24.1	24.1	24.1	G
Firm Capacity Position	-0.4	-0.3	-0.6	H = (D+E-F)-G
Low Certainty Resources	0.0	0.0	0.0	I
Potential Capacity Surplus/Deficit	-0.4	-0.3	-0.6	J = (H+I)

Values in Installed Capacity (ICAP)

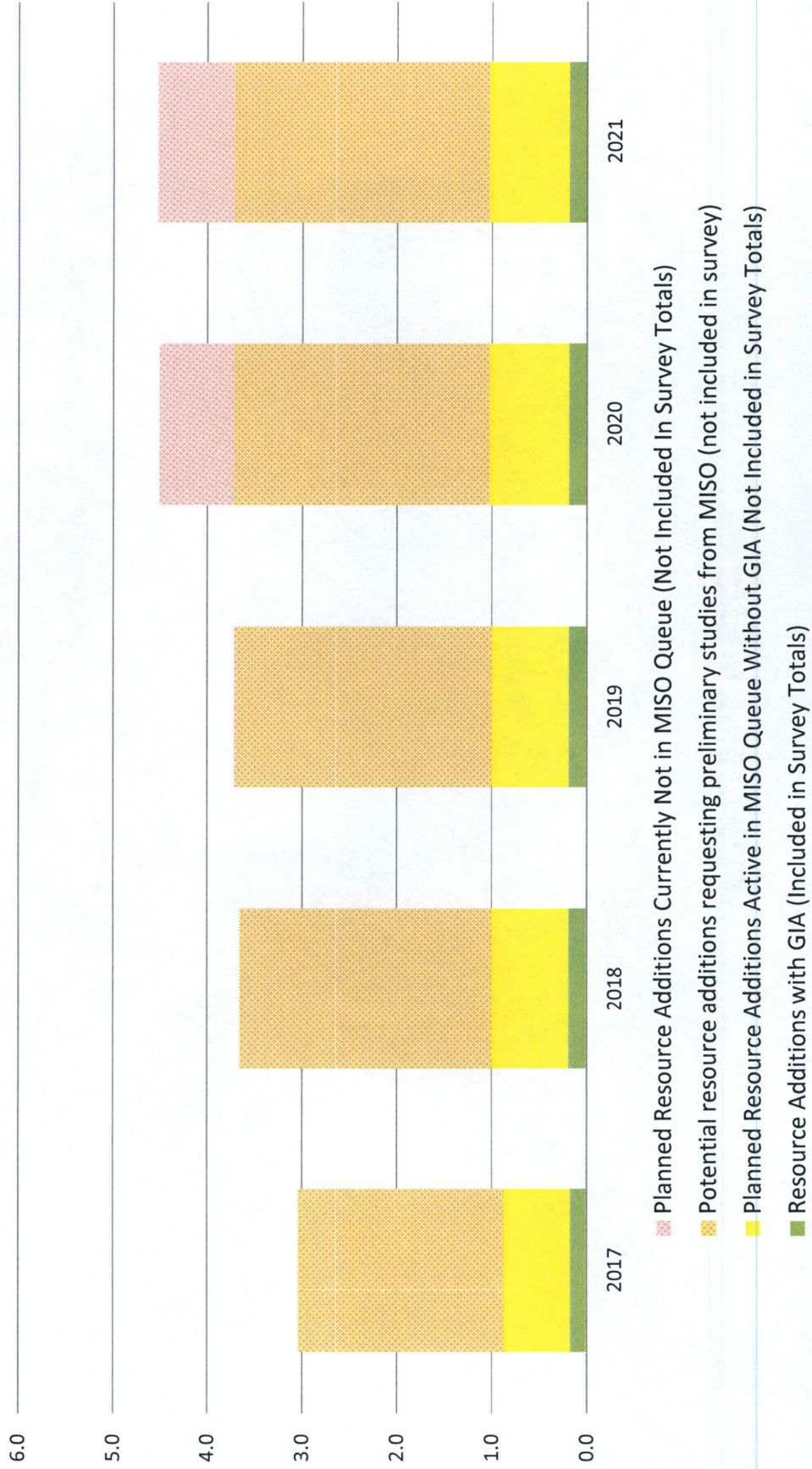
2015 vs 2016 OMS MISO Survey Results

Zone 7

2017 Outlook
Comparison of committed resources
In GW

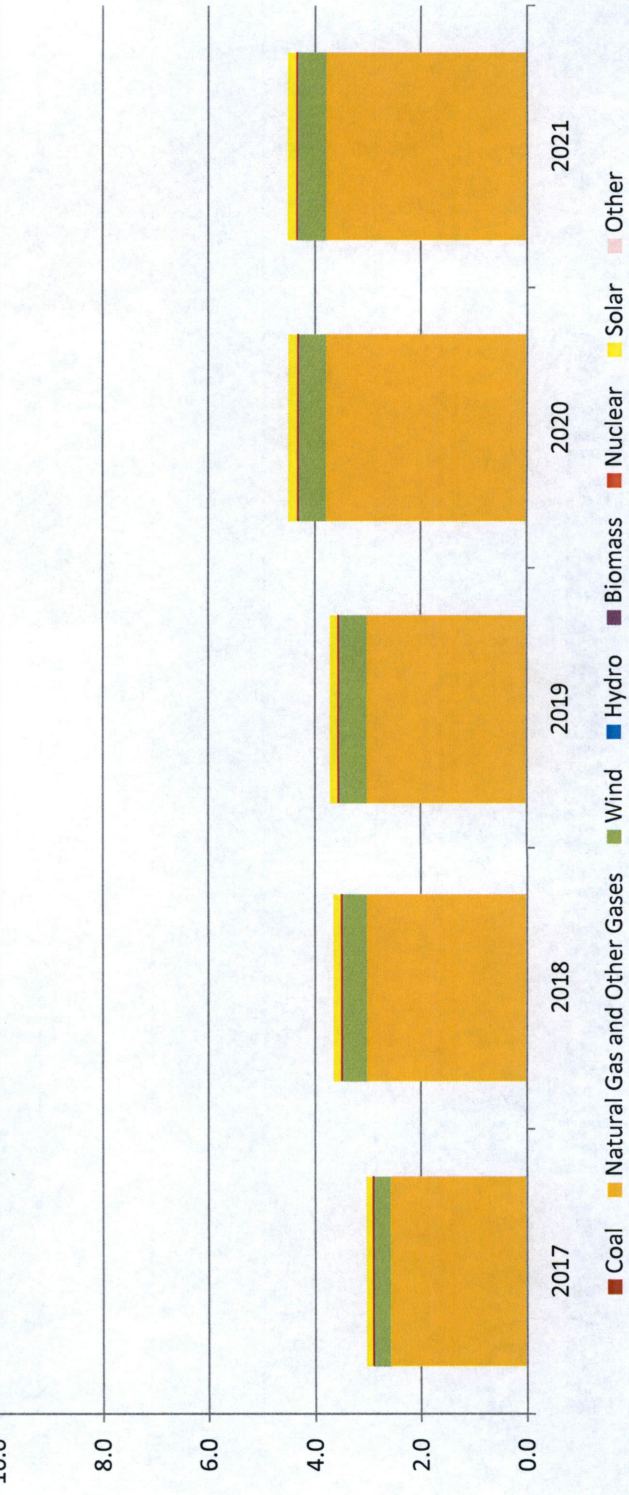
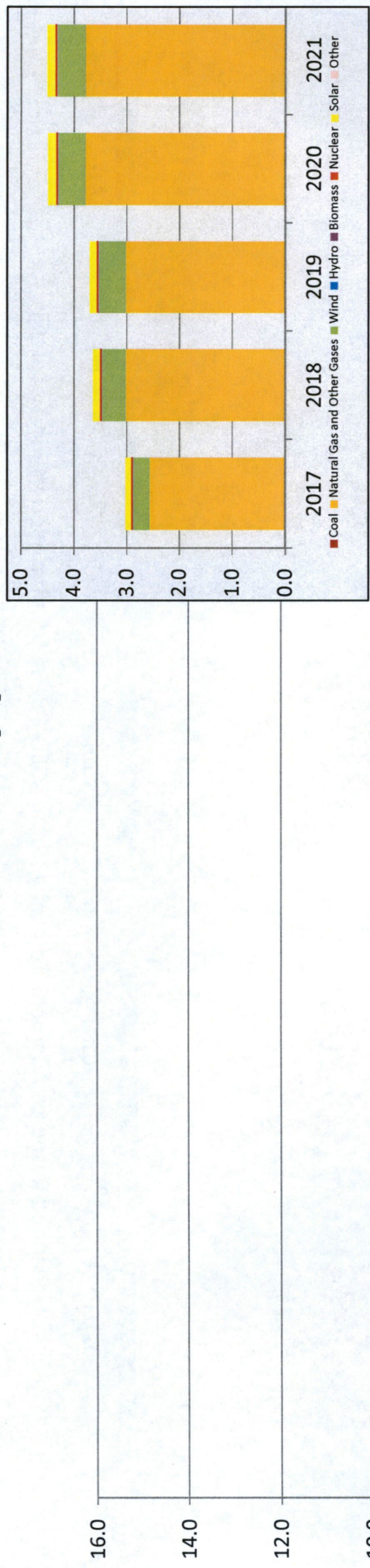


New Generation Reported in Survey Zone 7 (GW)



* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

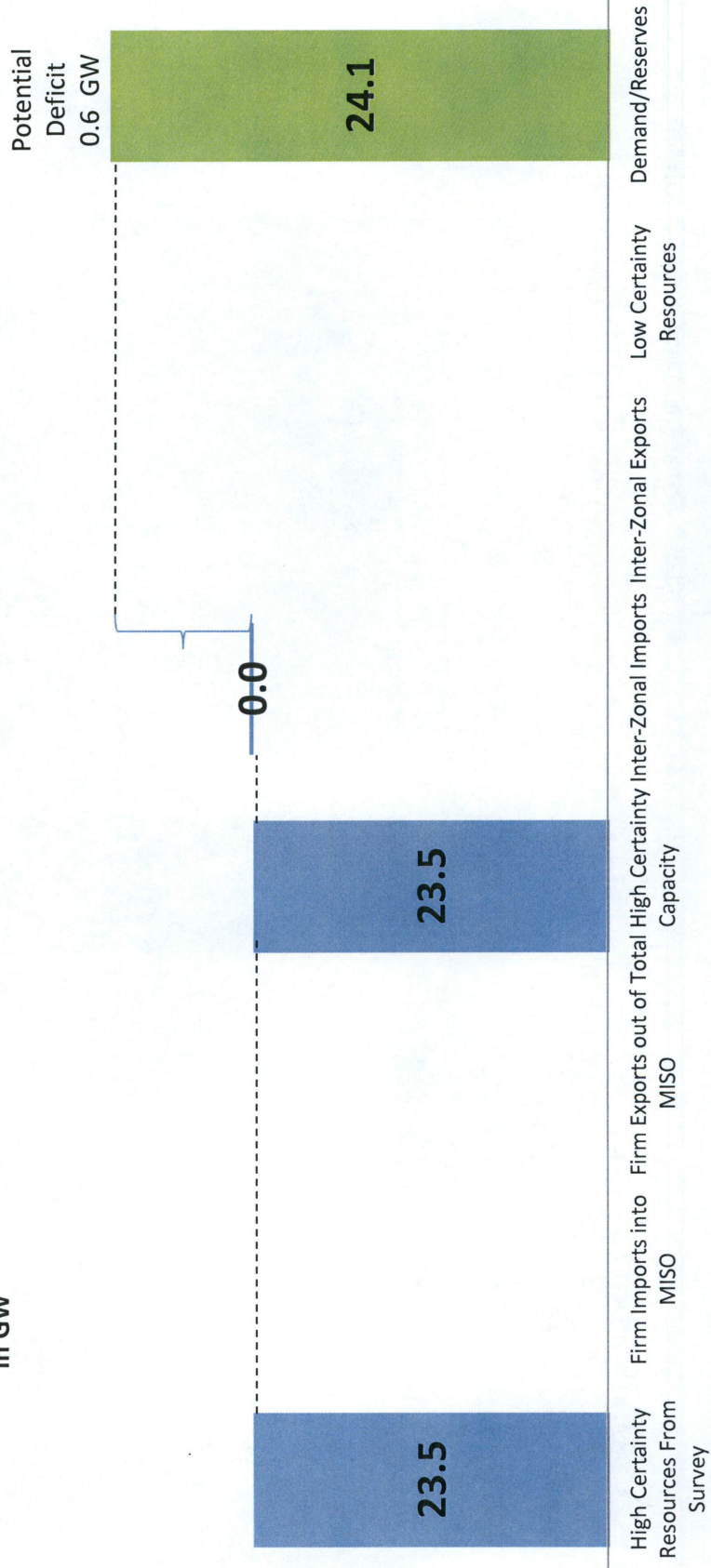
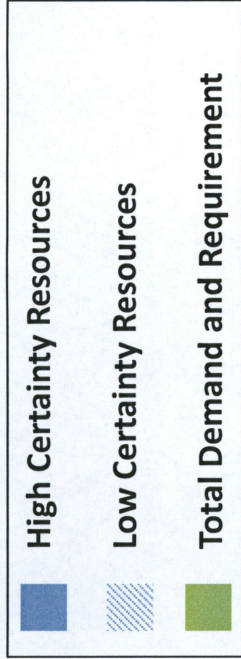
Zone 7 Reported New Resources by Fuel Type



2021 Resource Adequacy Forecast Zone 7 (GW)

2016 OMS MISO Survey

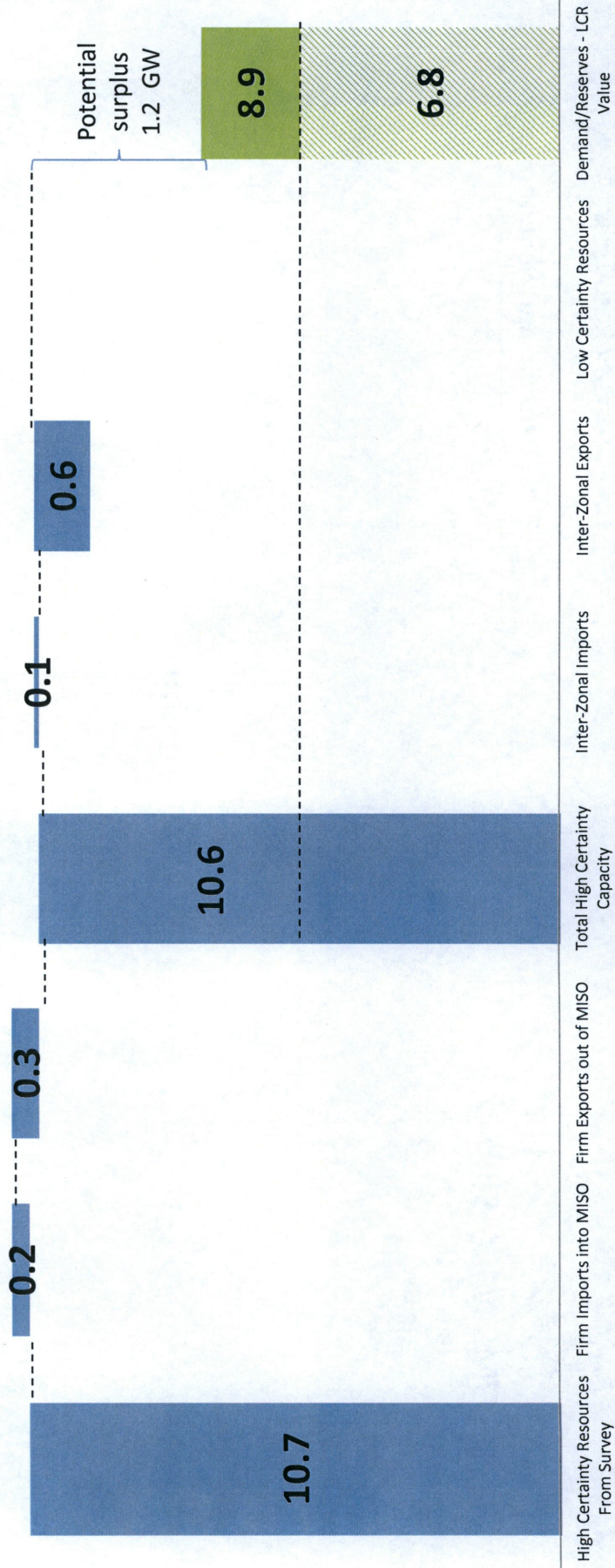
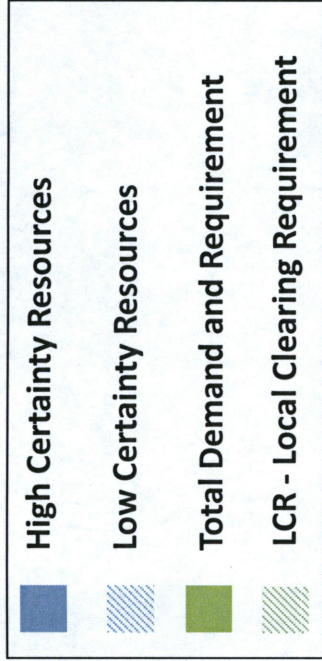
June 2016
In GW



Values in Installed Capacity (ICAP)

2017 Resource Adequacy Forecast Zone 8 (GW)

2016 OMS MISO Survey
June 2016
In GW



Values in Installed Capacity (ICAP)



2018 - 2020 Resource Adequacy Forecast Zone 8 (GW)

2016 OMS MISO Survey

June 2016

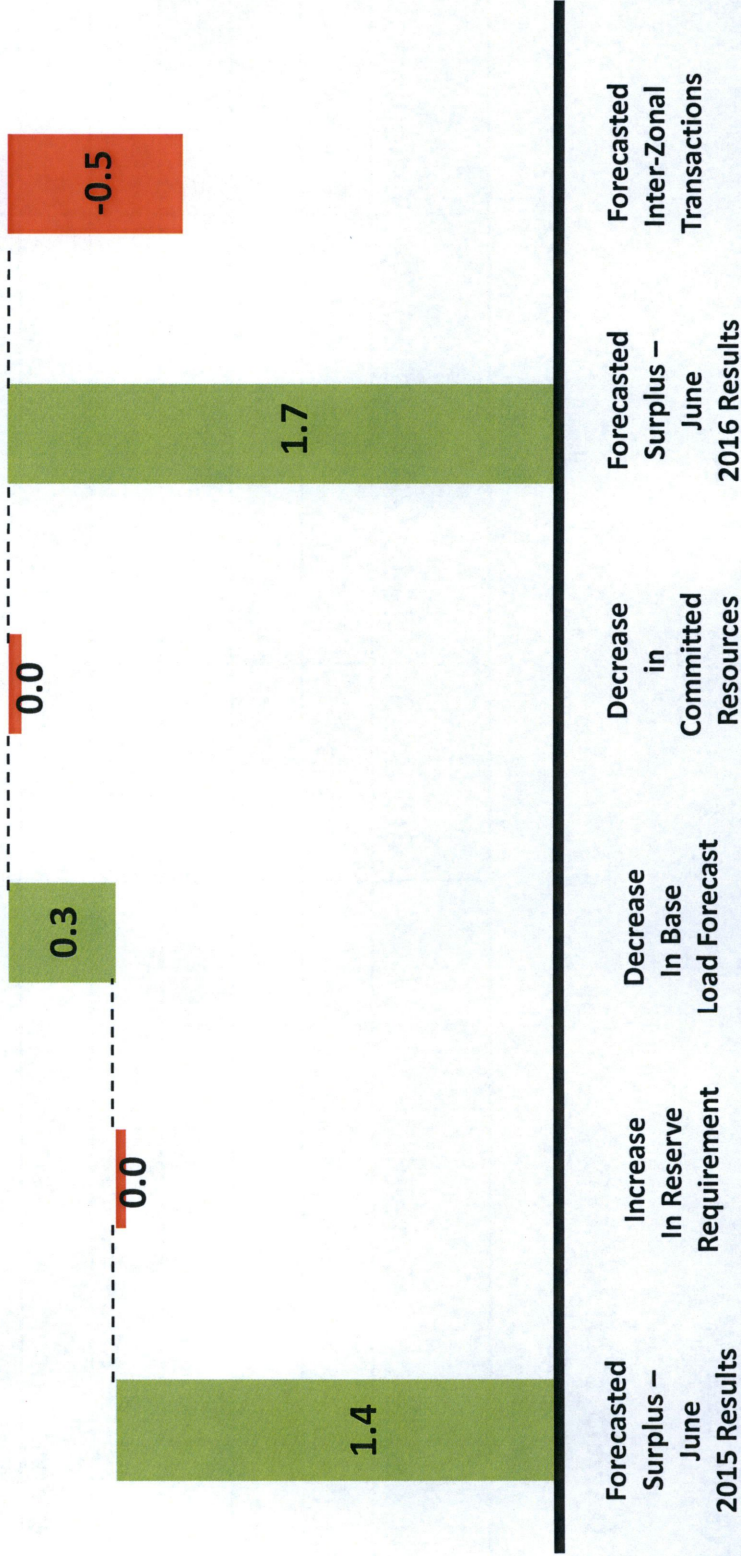
Values In GW

Zone 8	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	10.7	10.7	10.7	A
Firm Imports into MISO	0.2	0.2	0.2	B
Firm Exports out of MISO	0.3	0.3	0.3	C
Total High Certainty Capacity	10.6	10.6	10.6	D = (A+B)-C
Inter-Zonal Imports	0.1	0.1	0.0	E
Inter-Zonal Exports	0.6	0.6	0.6	F
Demand/Reserves	9.0	9.1	9.1	G
Firm Capacity Position	1.1	1.0	0.9	H=(D+E-F)-G
Low Certainty Resources	0.0	0.0	0.0	I
Potential Capacity Surplus/Deficit	1.1	1.0	0.9	J=(H+I)

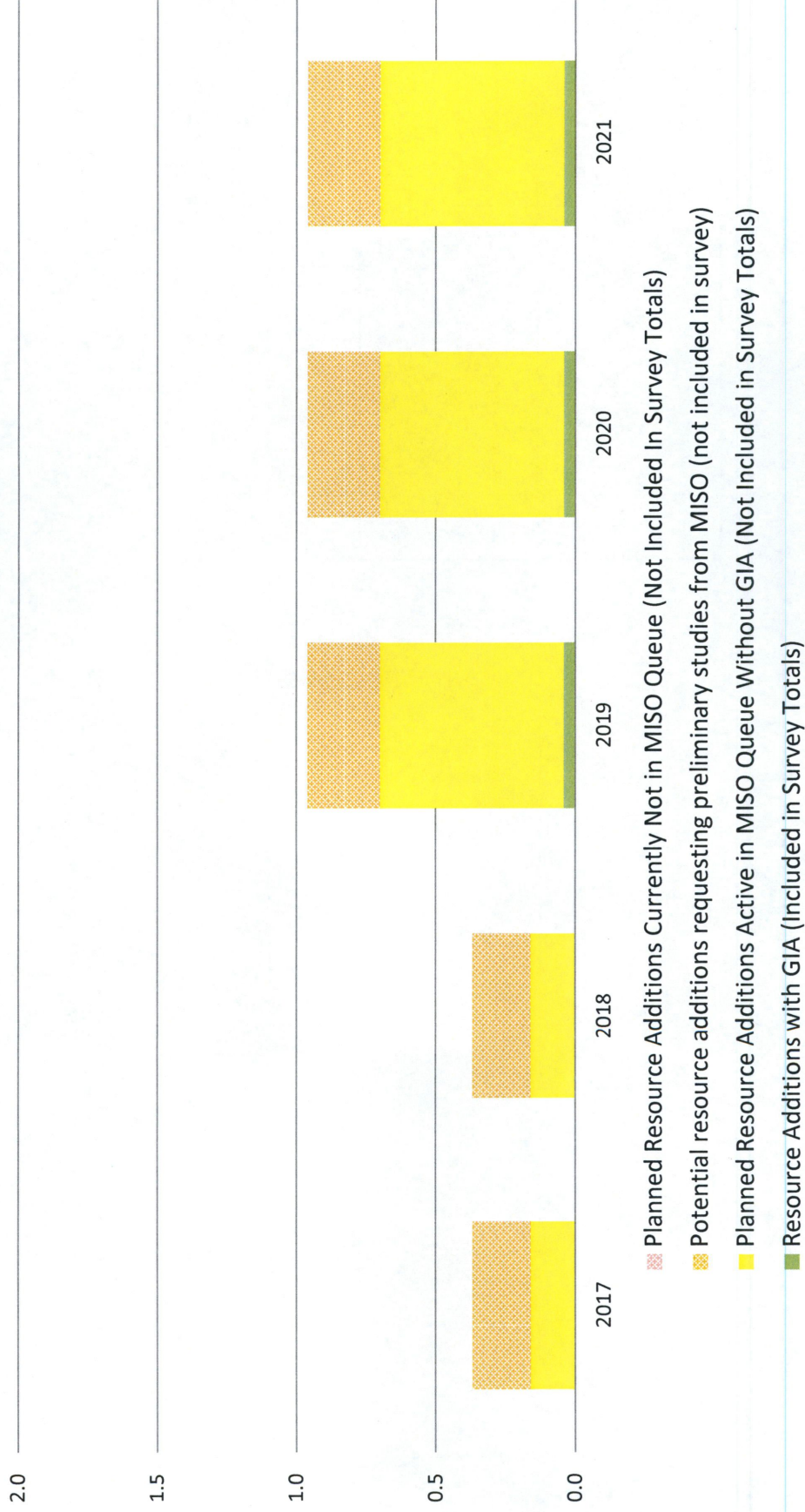
Values in Installed Capacity (ICAP)

2015 vs 2016 OMS MISO Survey Results Zone 8

2017 Outlook
Comparison of committed resources
In GW

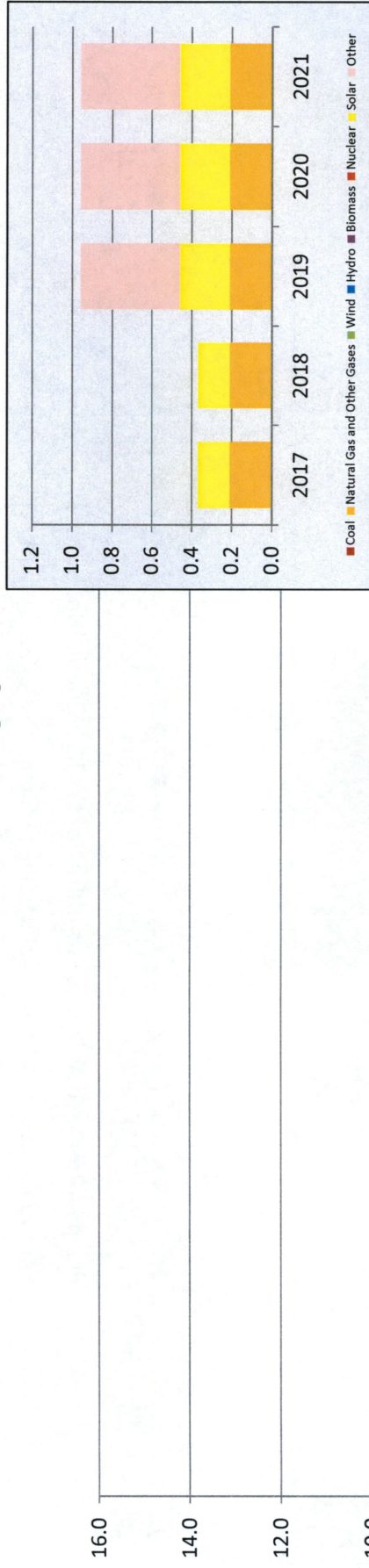


New Generation Reported in Survey Zone 8 (GW)



* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

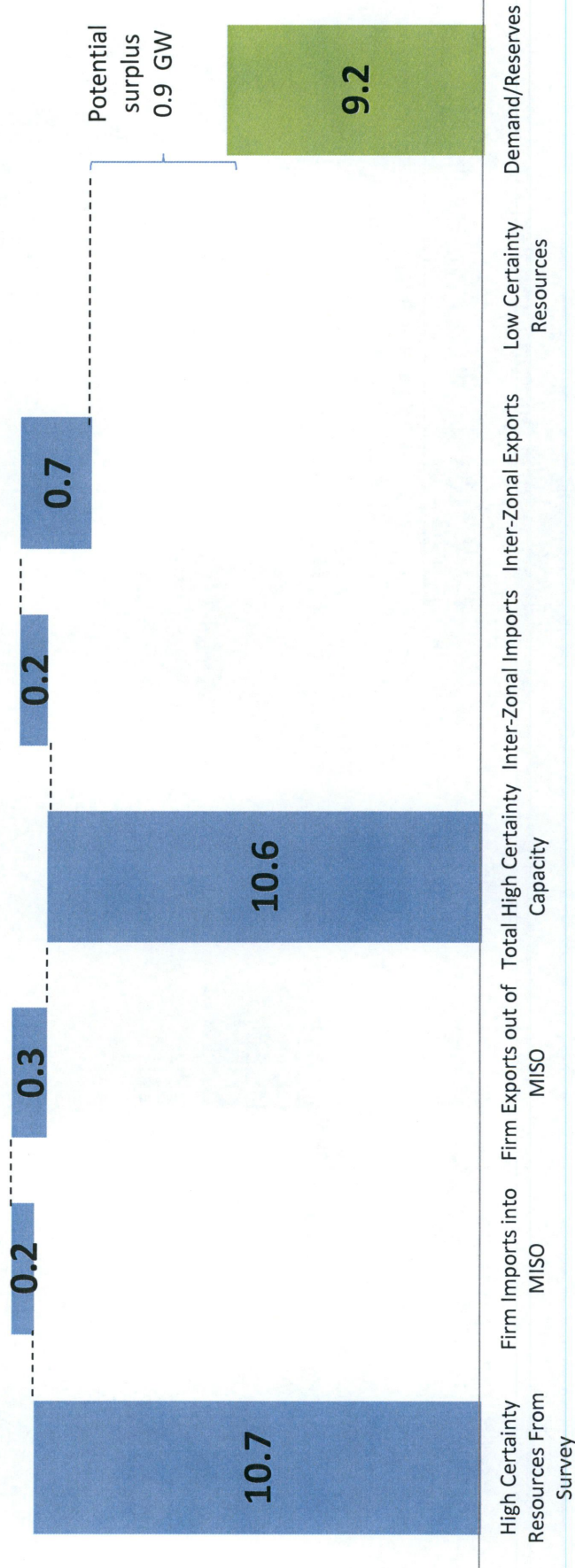
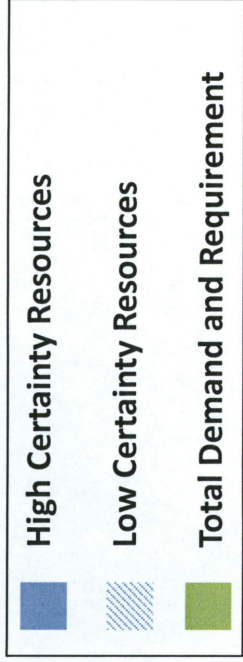
Zone 8 Reported New Resources by Fuel Type



2021 Resource Adequacy Forecast Zone 8 (GW)

2016 OMS MISO Survey

June 2016
In GW

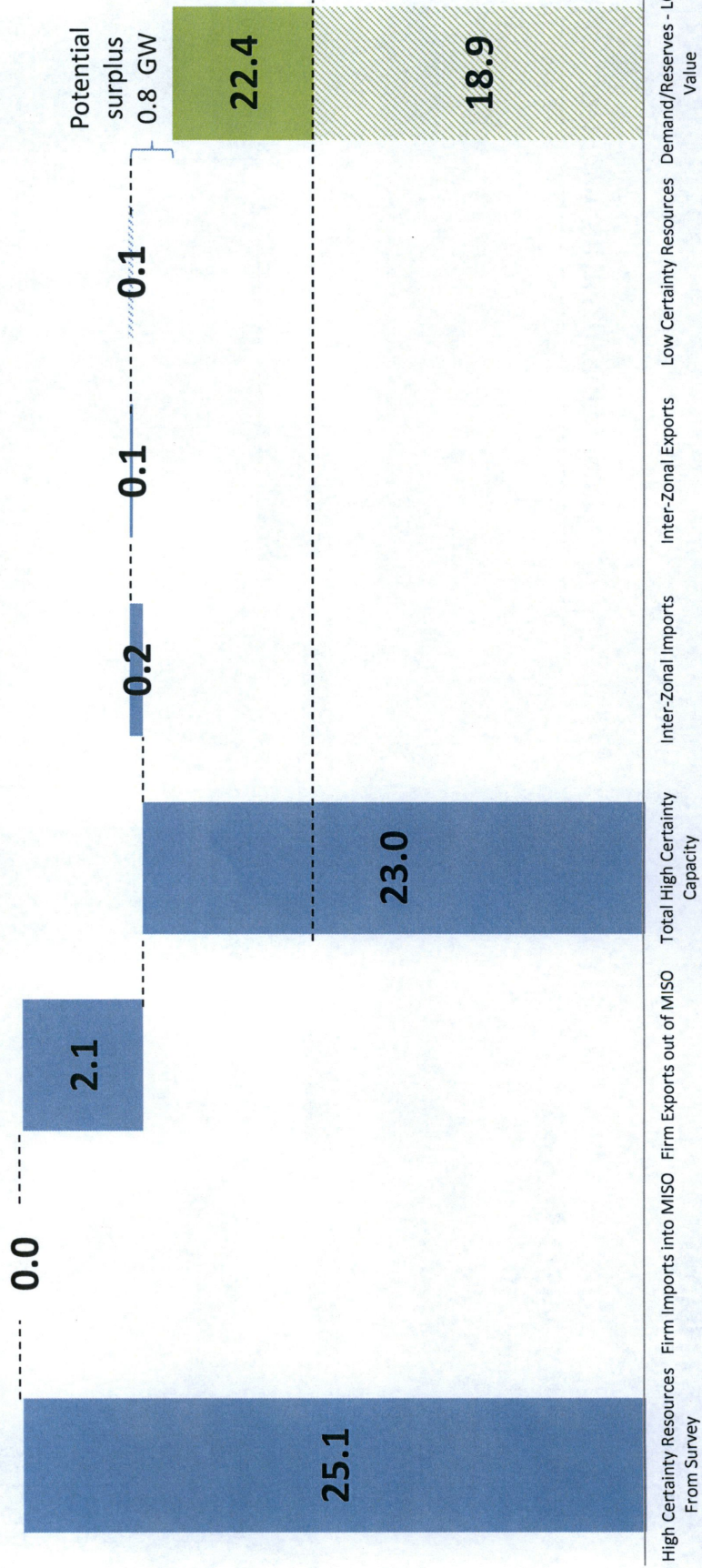
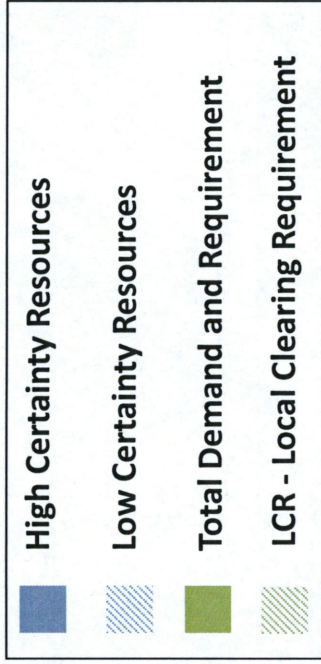


Values in Installed Capacity (ICAP)



2017 Resource Adequacy Forecast Zone 9 (GW)

2016 OMS MISO Survey
June 2016
In GW



Values in Installed Capacity (ICAP)



2018 - 2020 Resource Adequacy Forecast Zone 9 (GW)

2016 OMS MISO Survey

June 2016

Values in GW

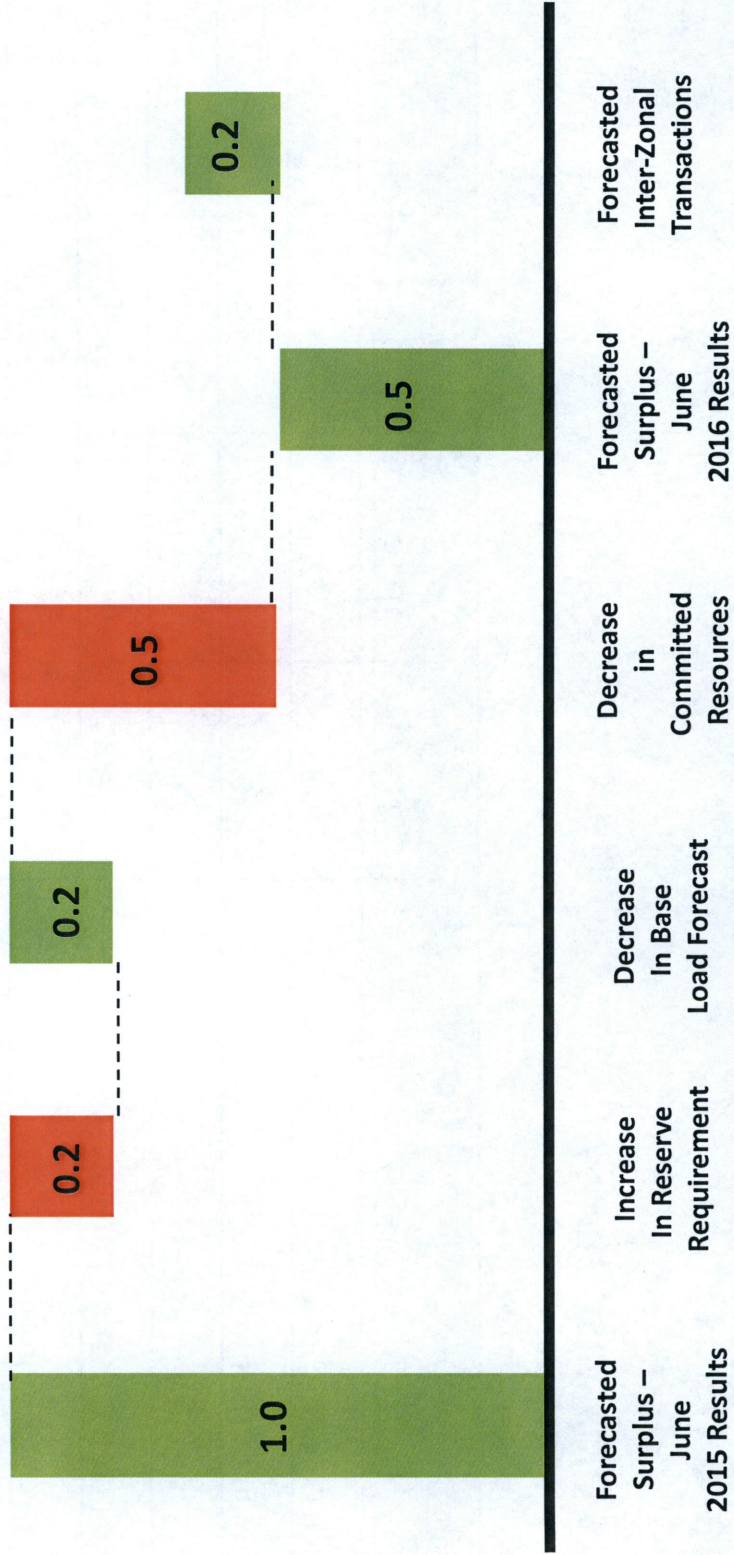
Zone 9	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	25.1	25.0	25.0	A
Firm Imports into MISO	0.0	0.0	0.0	B
Firm Exports out of MISO	1.7	1.1	1.1	C
Total High Certainty Capacity	23.4	23.9	23.9	D = (A+B)-C
Inter-Zonal Imports	0.2	0.2	0.2	E
Inter-Zonal Exports	0.1	0.1	0.0	F
Demand/Reserves	22.7	23.1	23.2	G
Firm Capacity Position	0.8	0.9	0.9	H=(D+E-F)-G
Low Certainty Resources	0.1	0.1	0.1	I
Potential Capacity Surplus/Deficit	0.9	1.0	1.0	J=(H+I)

Values in Installed Capacity (ICAP)

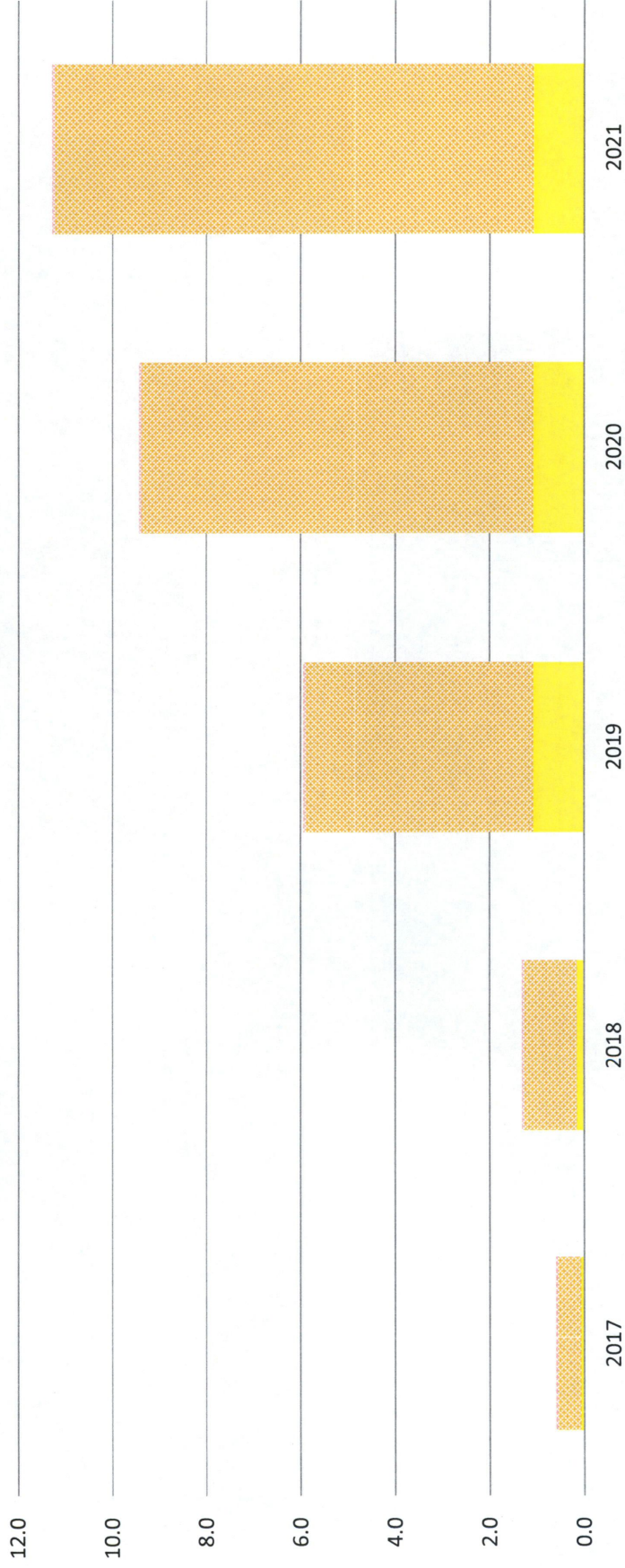
2015 vs 2016 OMS MISO Survey Results

Zone 9

2017 Outlook
Comparison of committed resources
In GW



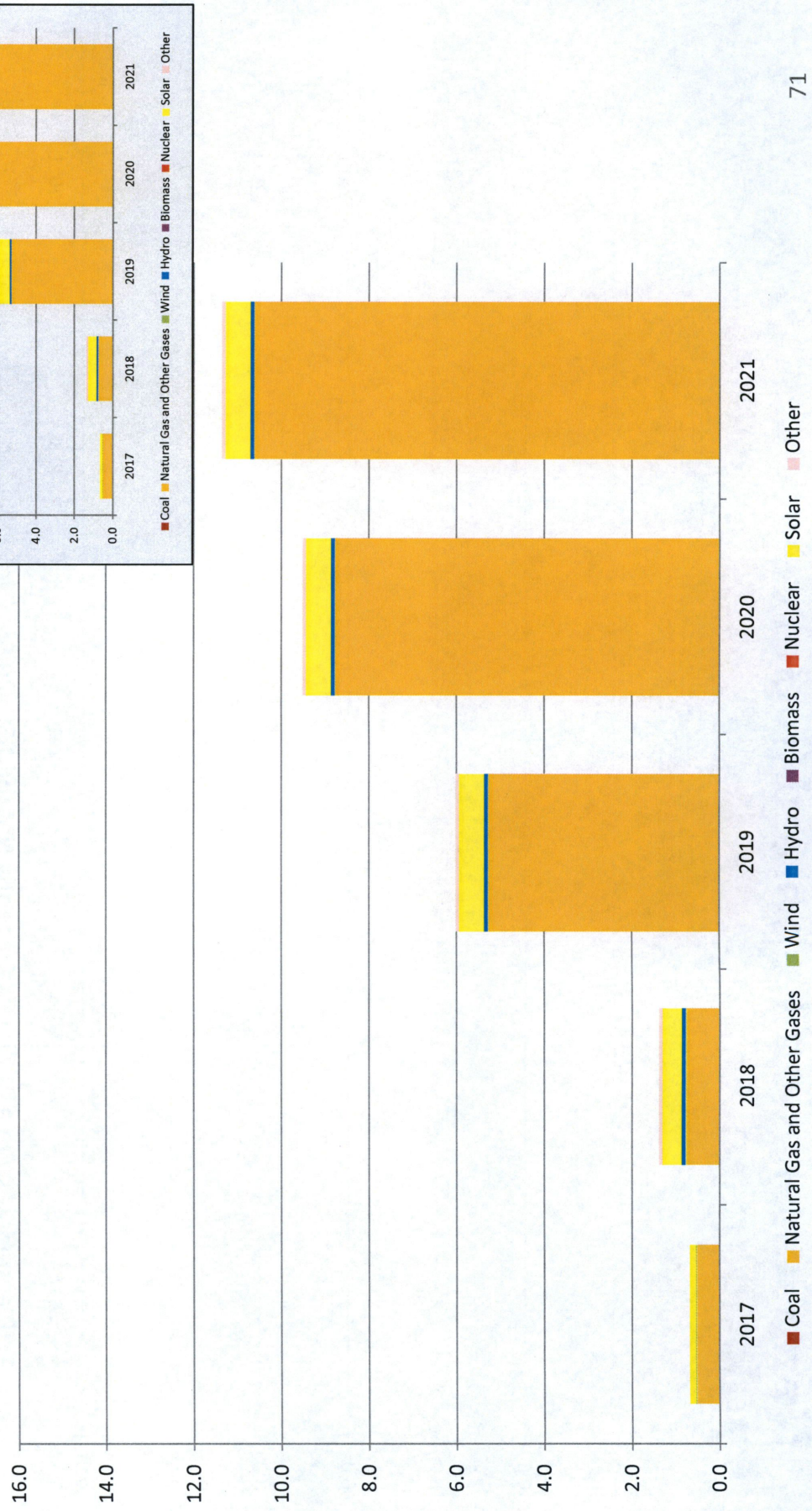
New Generation Reported in Survey Zone 9 (GW)



- Planned Resource Additions Currently Not in MISO Queue (Not Included In Survey Totals)
- Potential resource additions requesting preliminary studies from MISO (not included in survey)
- Planned Resource Additions Active in MISO Queue Without GIA (Not Included in Survey Totals)
- Resource Additions with GIA (Included in Survey Totals)

* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

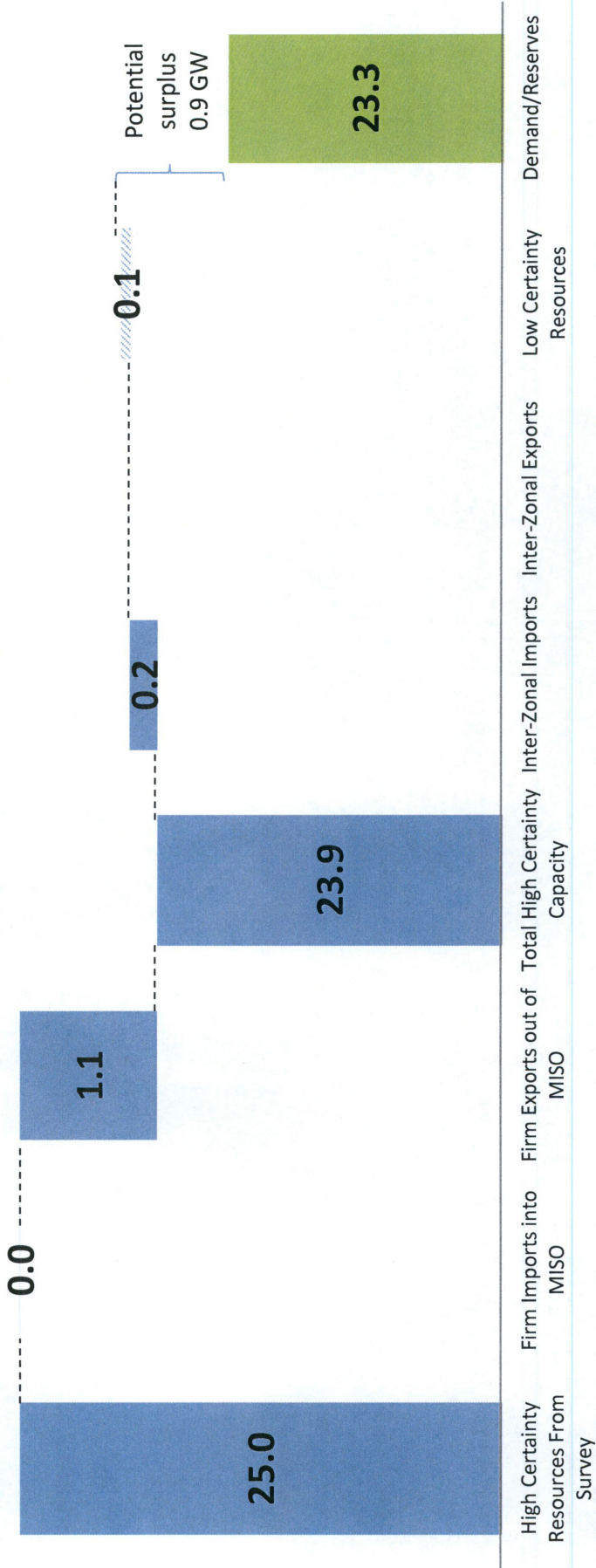
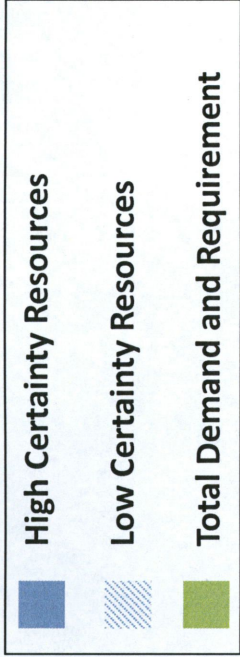
Zone 9 Reported New Resources by Fuel Type



2021 Resource Adequacy Forecast Zone 9 (GW)

2016 OMS MISO Survey

June 2016
In GW

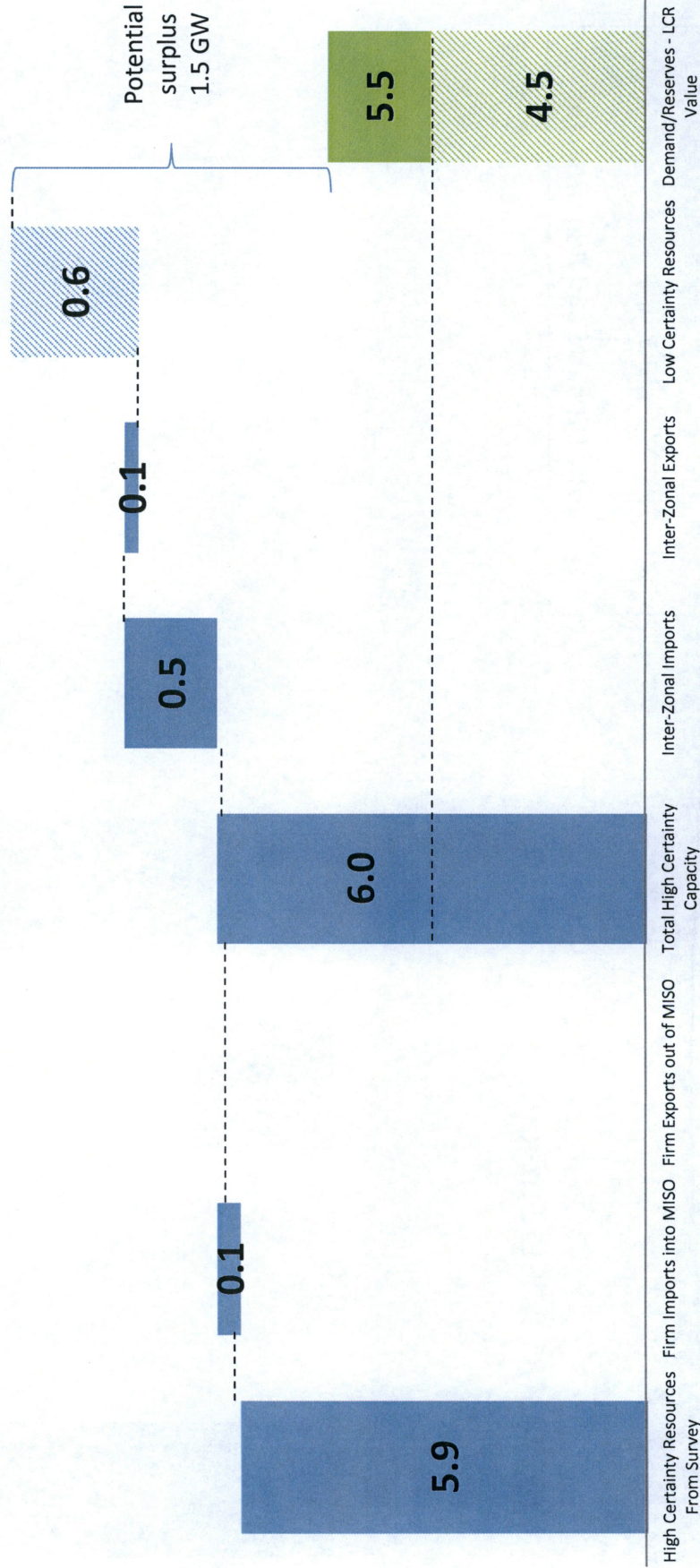
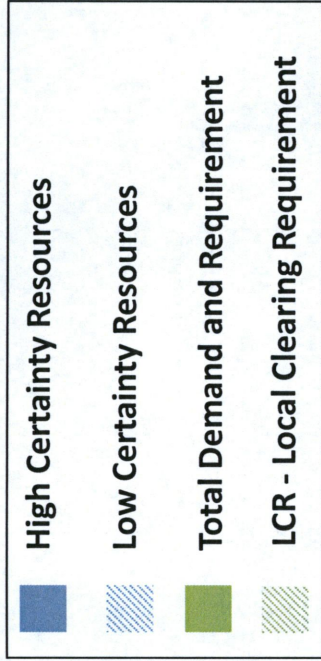


Values in Installed Capacity (ICAP)



2017 Resource Adequacy Forecast Zone 10 (GW)

2016 OMS MISO Survey
June 2016
In GW



Values in Installed Capacity (ICAP)



2018 - 2020 Resource Adequacy Forecast Zone 10 (GW)

2016 OMS MISO Survey

June 2016

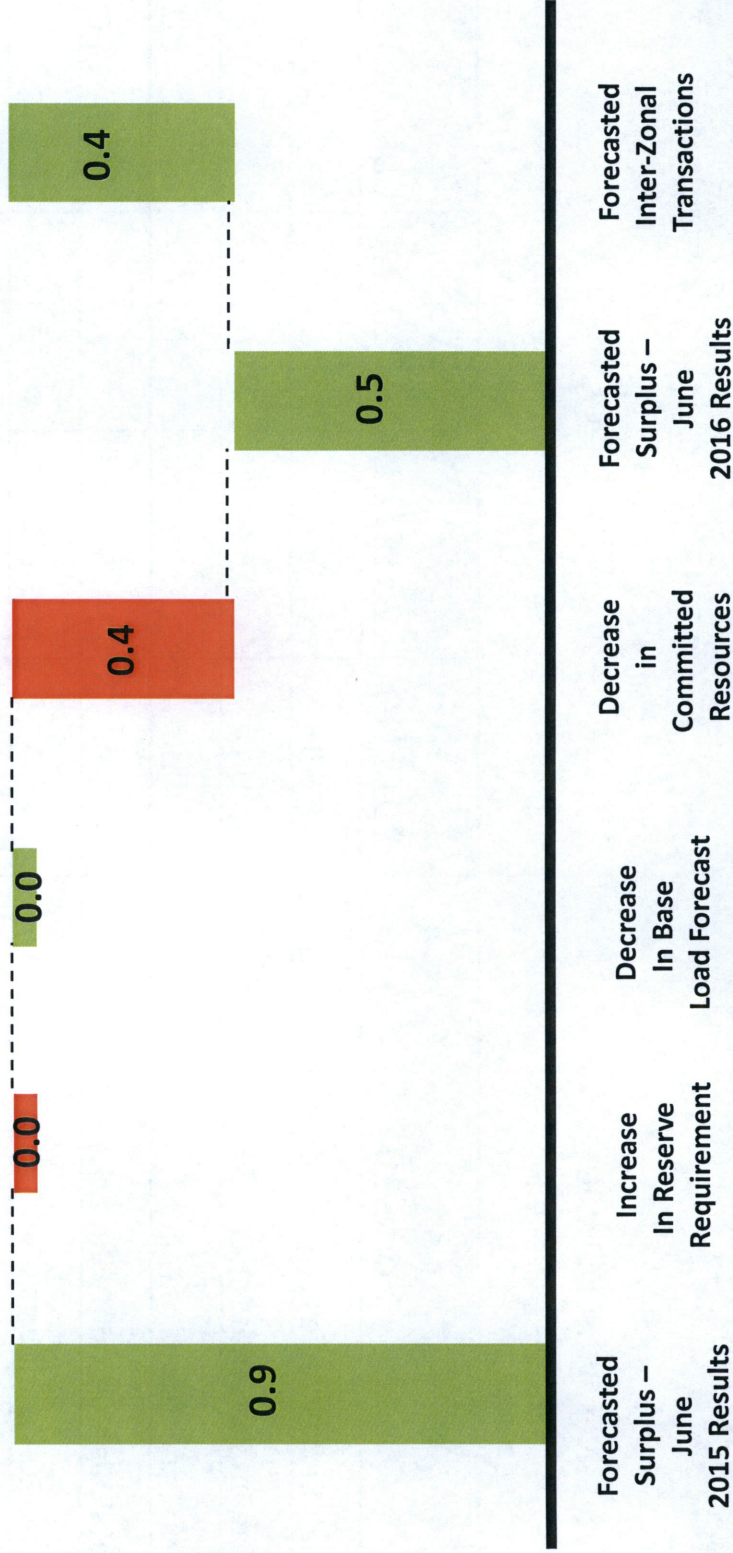
Values in GW

Zone 10	2018/19	2019/20	2020/21	Calculation
High Certainty Resources From Survey	6.0	5.7	5.7	A
Firm Imports into MISO	0.1	0.1	0.1	B
Firm Exports out of MISO	0.1	0.1	0.1	C
Total High Certainty Capacity	6.0	5.7	5.7	D = (A+B)-C
Inter-Zonal Imports	0.4	0.4	0.4	E
Inter-Zonal Exports	0.1	0.1	0.1	F
Demand/Reserves	5.5	5.5	5.5	G
Firm Capacity Position	0.8	0.5	0.5	H = (D+E-F)-G
Low Certainty Resources	0.6	0.9	0.9	I
Potential Capacity Surplus/Deficit	1.4	1.4	1.4	J = (H+I)

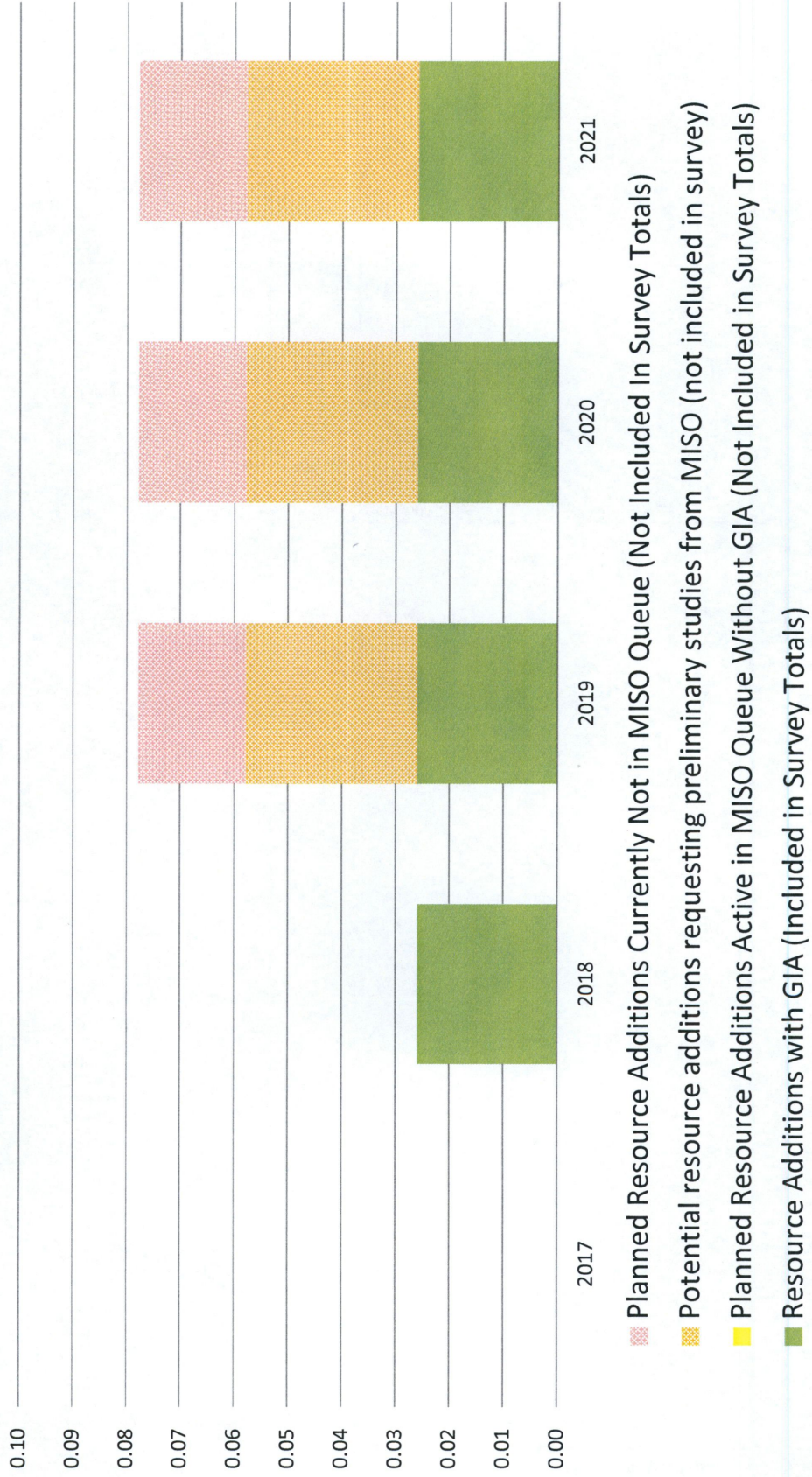
Values in Installed Capacity (ICAP)

2015 vs 2016 OMS MISO Survey Results Zone 10

2017 Outlook
Comparison of committed resources
In GW

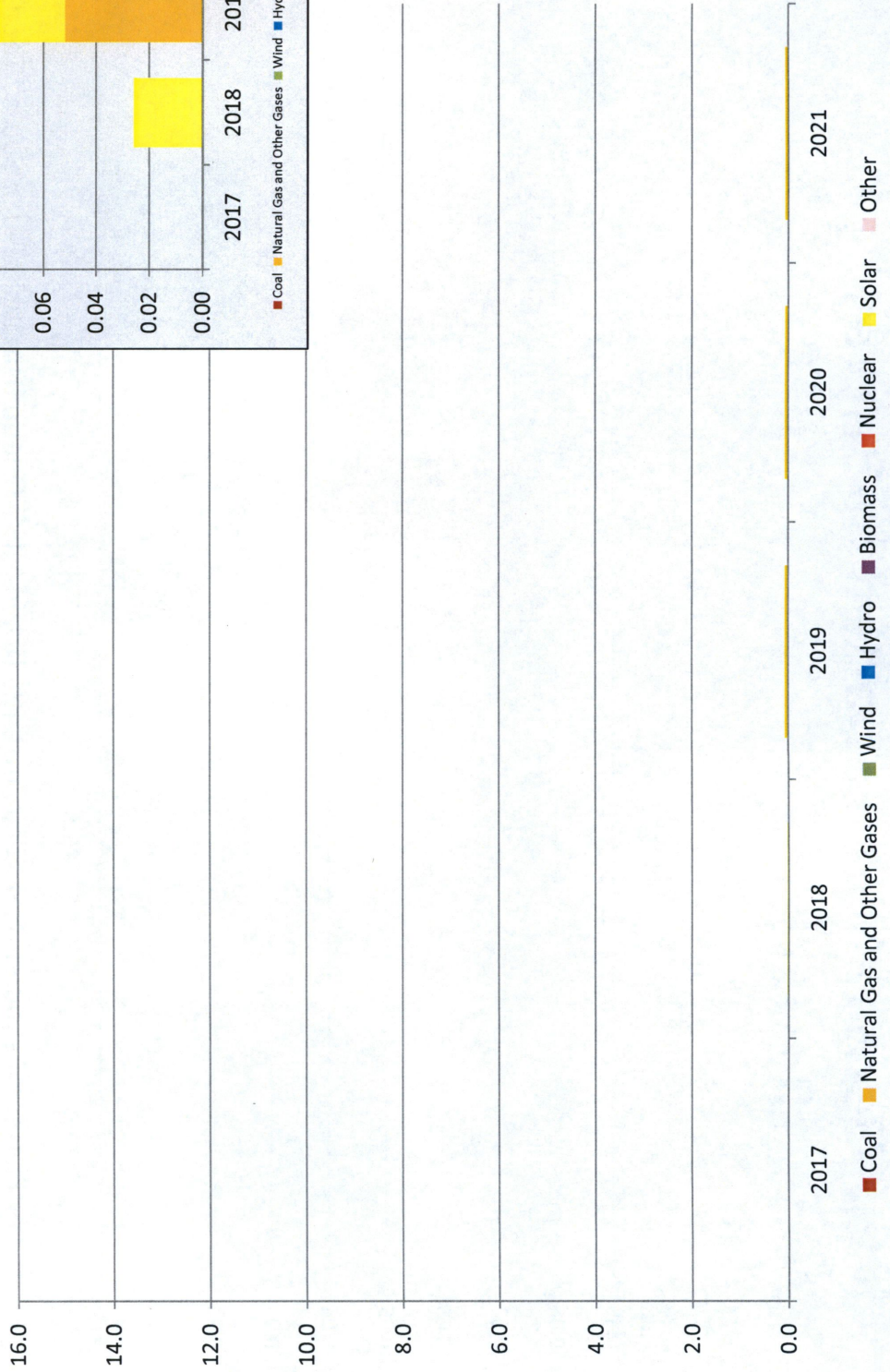
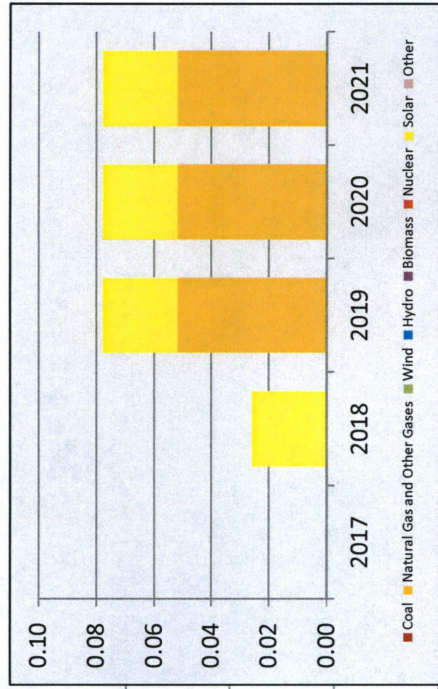


New Generation Reported in Survey Zone 10 (GW)



* Wind at capacity credit of 15.7%; solar at capacity credit of 50%

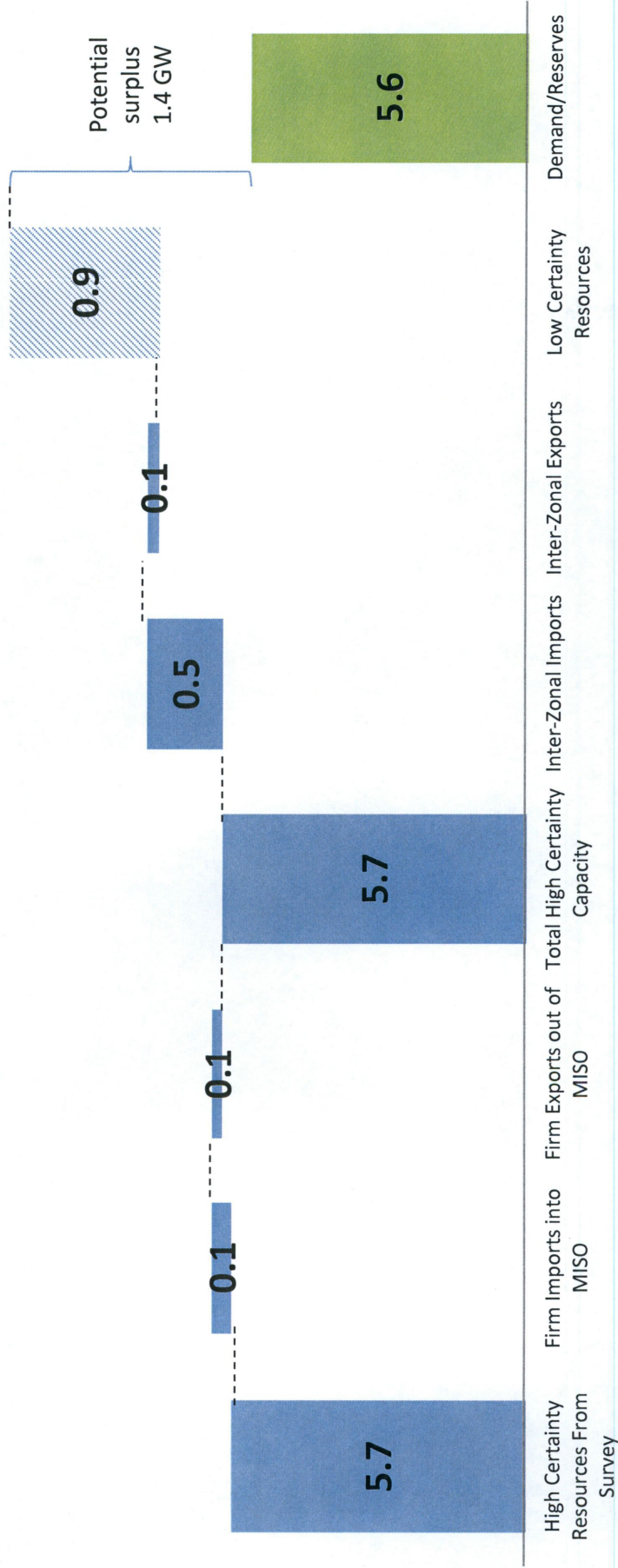
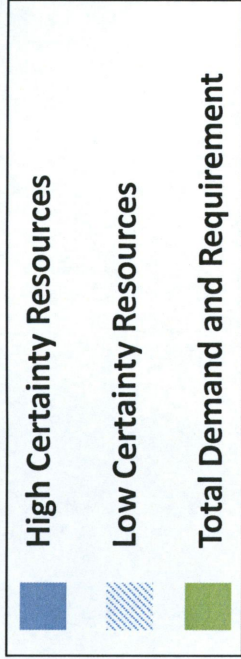
Zone 10 Reported New Resources by Fuel Type



2021 Resource Adequacy Forecast Zone 10 (GW)

2016 OMS MISO Survey

June 2016
In GW

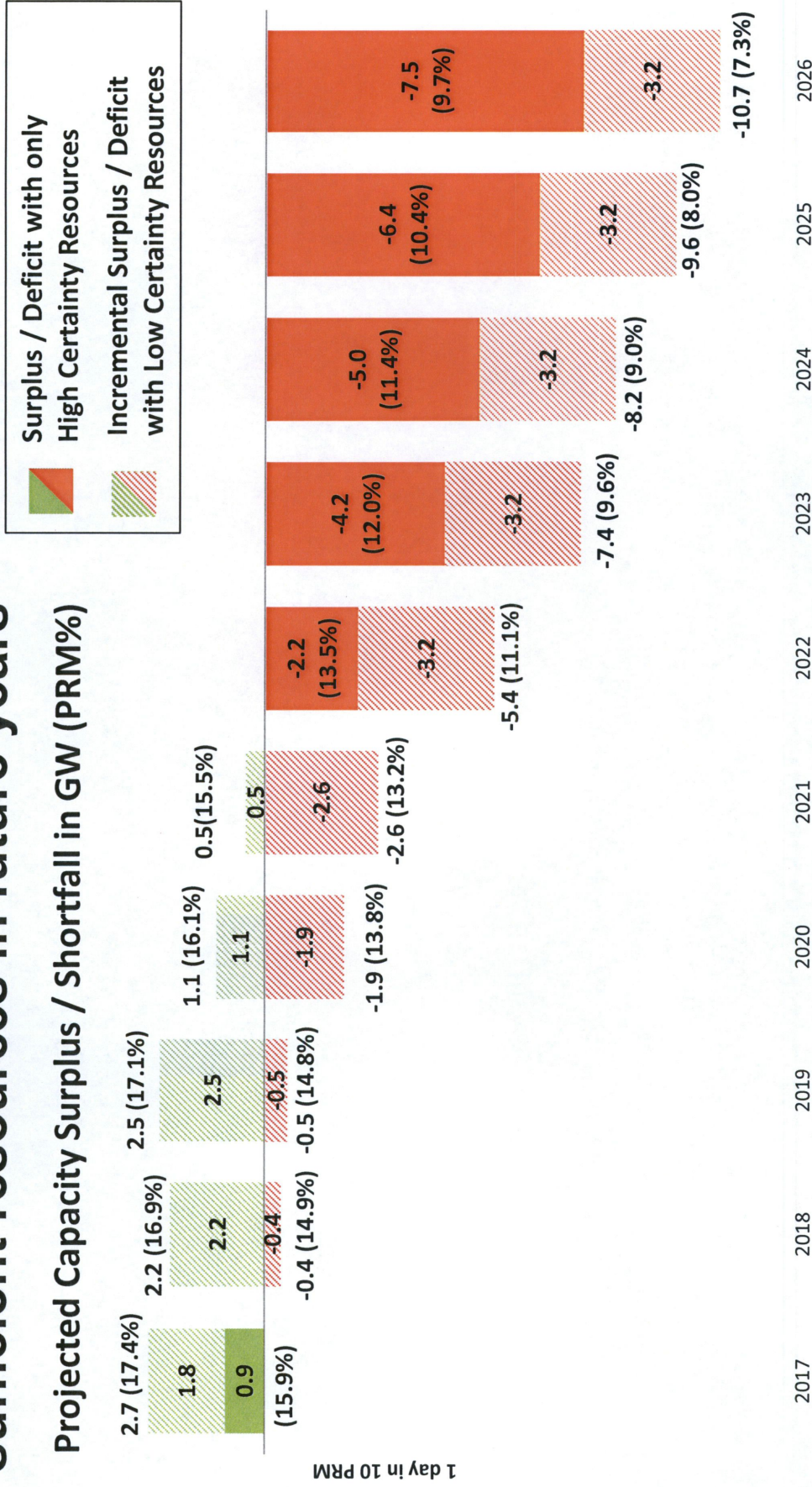


Values in Installed Capacity (ICAP)

Ten Year Outlook

Additional actions are required in the near term to ensure sufficient resources in future years

Projected Capacity Surplus / Shortfall in GW (PRM%)



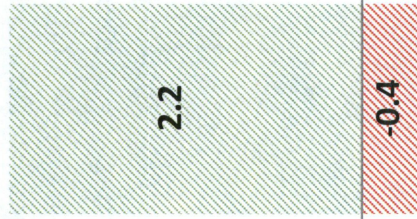
* This slide shows a forecast. These figures will change as future capacity plans are solidified by load serving entities and state commissions.

2018 – 2020 Regional Values

2018 Capacity Projections

2018 Regional
Outlook, GW (PRM%)

16.9%

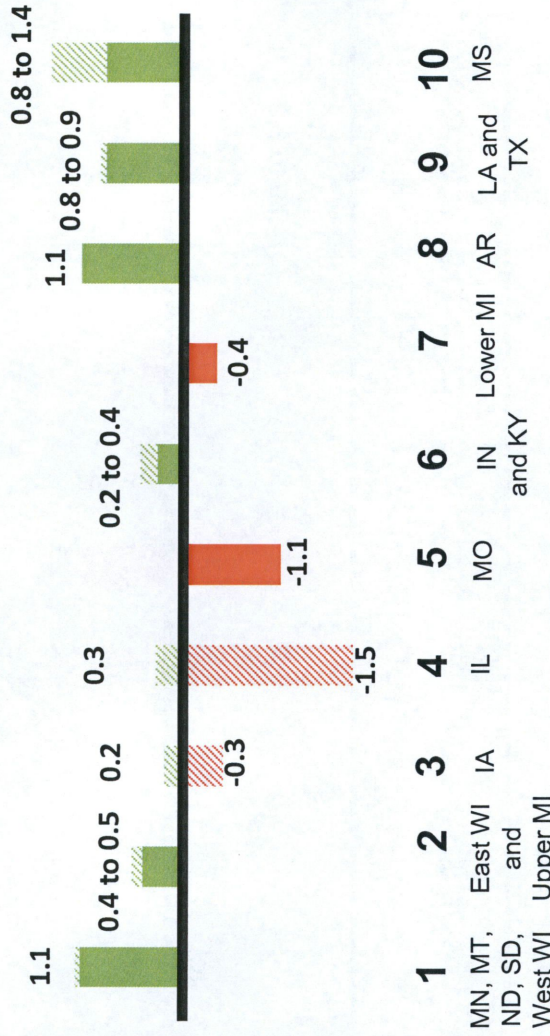


One day in ten
PRM (15.2%)

Low Certainty Resource
Impact on Surplus / Deficit
Surplus / Deficit with High Certainty Resources

Shading represents total low certainty resources when there is a deficit of high certainty resources

Capacity Located in Zones against Reserve Requirement* (GW)



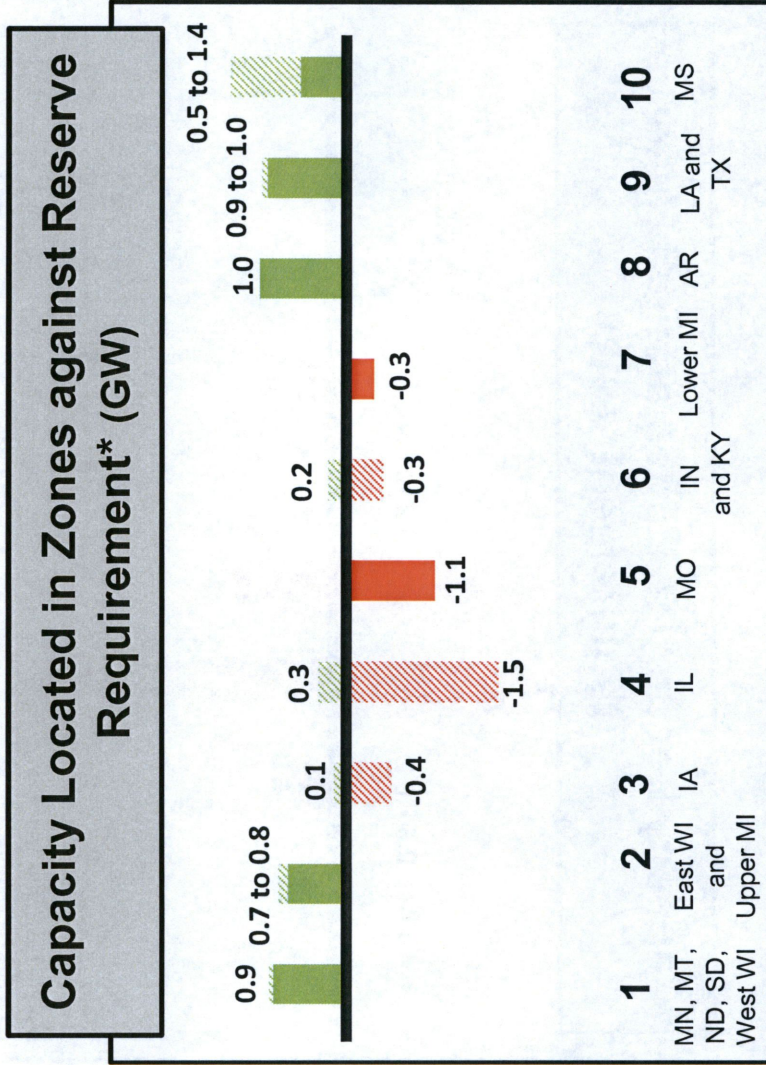
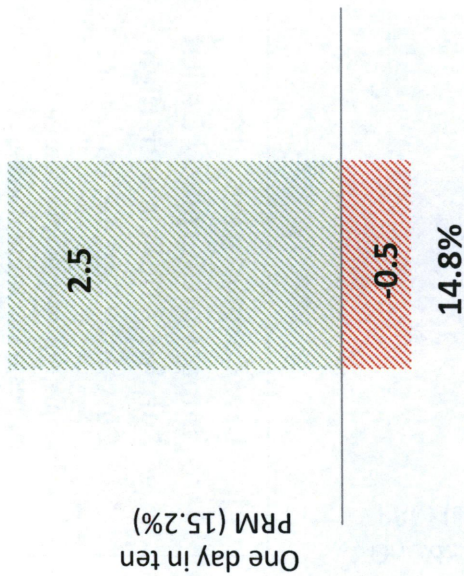
- 1 MN, MT, ND, SD, West WI
- 2 East WI and Upper MI
- 3 IA
- 4 IL
- 5 MO
- 6 IN and KY
- 7 Lower MI
- 8 AR
- 9 LA and TX
- 10 MS



*Positions include reported inter-zonal transfers Publically announced potential retirements were included as low certainty resources Exports from Zone 8, 9, and 10 were limited by the Subregional Power Balance Constraint to 1.5 GW

2019 Capacity Projections

2019 Regional
Outlook, GW (PRM%)
17.1%



Low Certainty Resource
Impact on Surplus / Deficit

Surplus / Deficit with High Certainty Resources

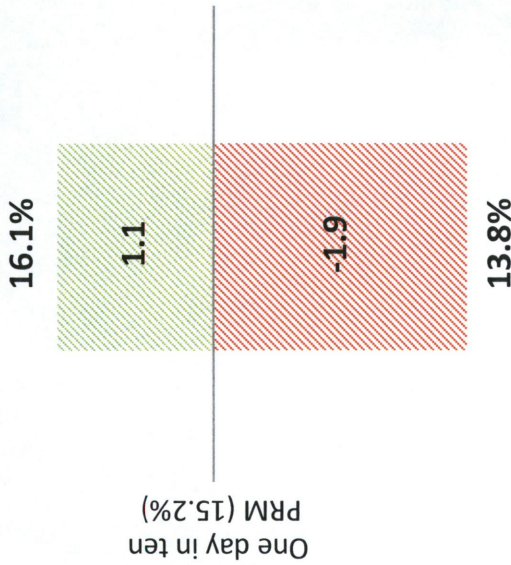
Shading represents total low certainty resources when there is a deficit of high certainty resources

* Positions include reported inter-zonal transfers Publically announced potential retirements were included as low certainty resources Exports from Zone 8, 9, and 10 were limited by the Subregional Power Balance Constraint to 1.5 GW



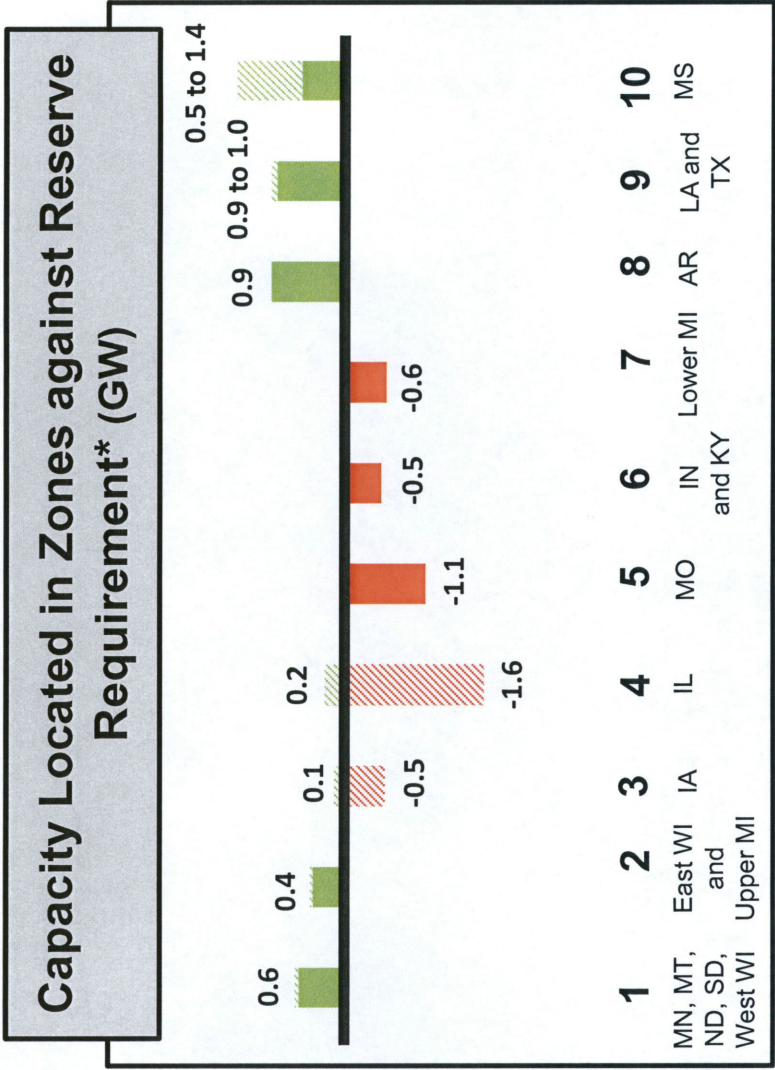
2020 Capacity Projections

2020 Regional Outlook, GW (PRM%)



Low Certainty Resource
Impact on Surplus / Deficit
Surplus / Deficit with High Certainty Resources

Shading represents total low certainty resources when there is a deficit of high certainty resources



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