
From: Coarsey, John B. - Director, Electric T & D Planning <CoarJB@jea.com>
Sent: Friday, April 19, 2019 7:06 PM
To: Dykes, Melissa H. - President/COO; McInall, Steven G. - VP & Chief Energy & Water Planning
Subject: Fwd: Final Slides for Monday

From our discussion yesterday with B&M the following are some high level highlights

- 1) Not much difference in our units between 2023 and 2029 in the Status Quo. (Non-Organized market)
- 2) FRCC organized market. We are in pretty good shape
- 3) SE organized market. Our combined cycle and NS 1,2 ok. Rest not. This is due to cheaper gas transportation cost and gas cost outside Peninsular Florida. SOCO has good coal contracts so Scherer is solid.

Above is summary. Hope this will help you out. See you Monday. Happy Easter to both.

Thanks,

John C

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J E A
Sent from my iPhone X

Begin forwarded message:

From: "Lind, Matthew" <mlind@burnsmcd.com>
Date: April 19, 2019 at 5:58:43 PM EDT
To: John Coarsey <CoarJB@jea.com>
Subject: Final Slides for Monday

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John-
Please see attached the deck we will use for Monday's presentation. Have a great weekend!

Thanks,

Matthew Lind, PE* \ Burns & McDonnell

Associate Project Manager

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Regional Market Study Draft



JEA

April 22, 2019

Agenda

- ▶ Terminology
- ▶ Utilization
- ▶ Profitability
- ▶ Market preferences

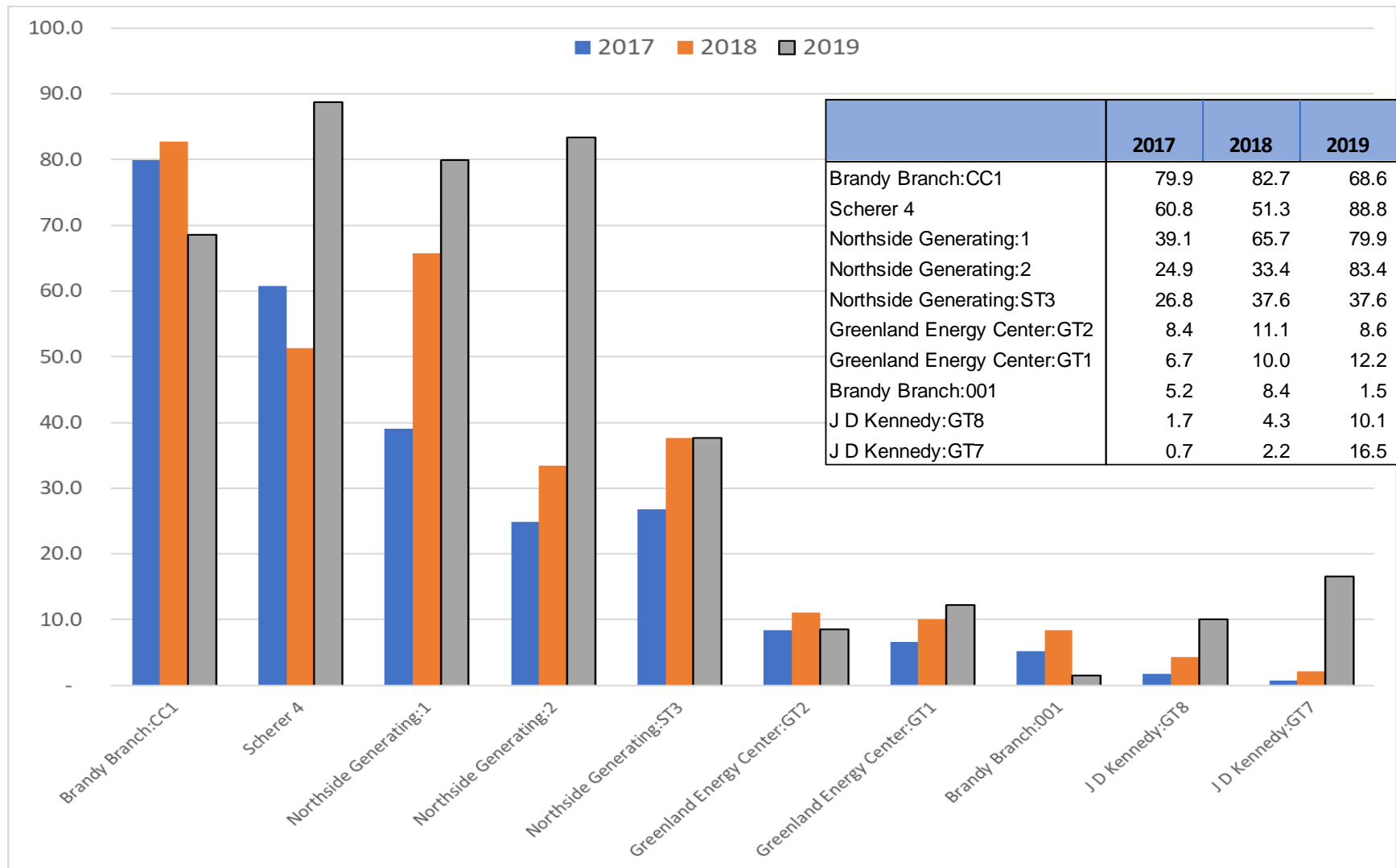
Nomenclature and References

- ▶ JEA – Pertaining to or in reference to JEA units/system only
- ▶ Reference – Reference case scenario
 - Balancing Area commitment – JEA focused
- ▶ FRCC – Scenario results for FRCC
 - Florida and Gulf Power
- ▶ SE – Scenario results and reference to Southeast market scenario (the full area)
 - Florida, Gulf Power and Southern Company (SOCO) plus adjacent to SOCO

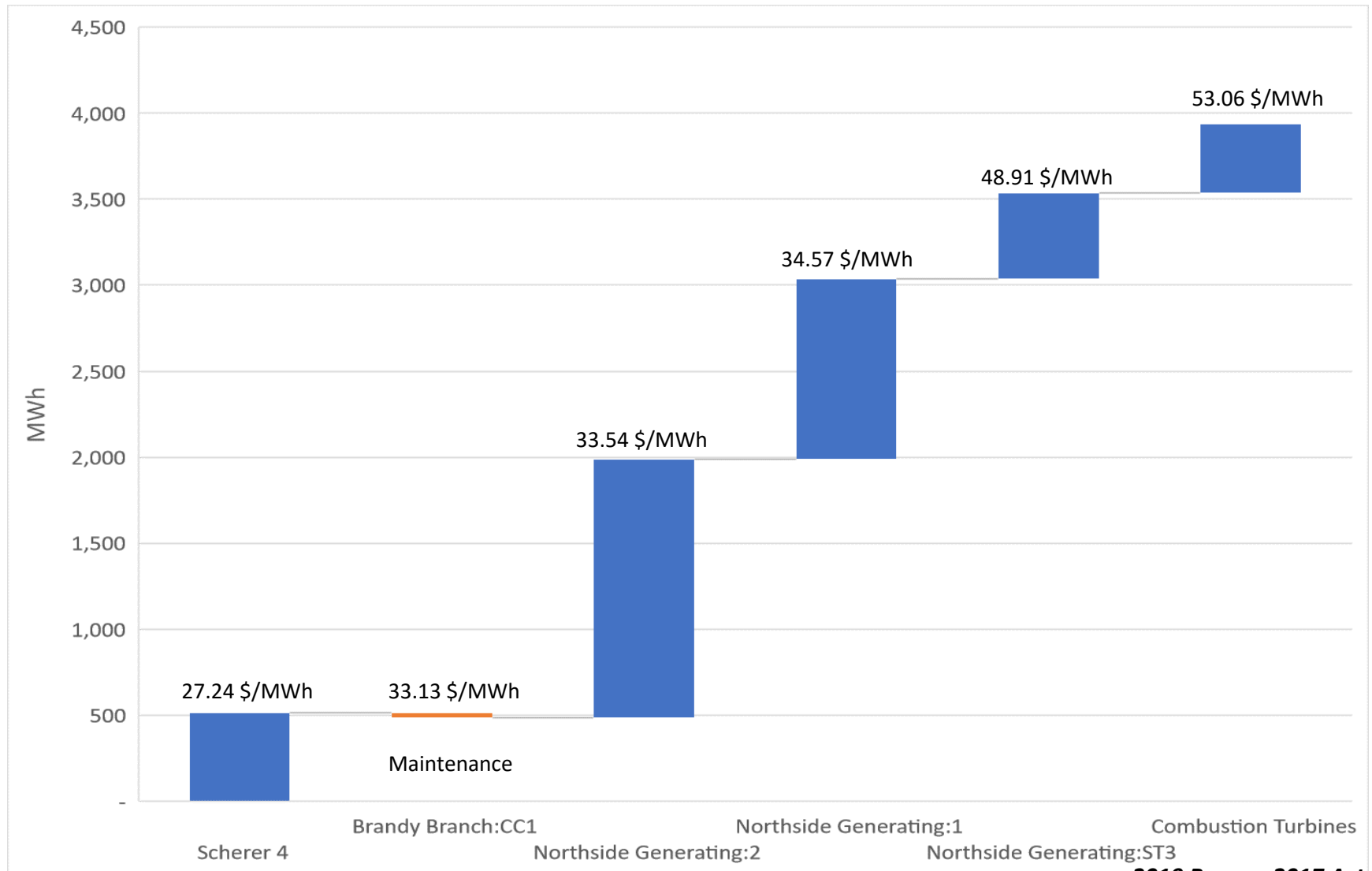
JEA Units and Categories

Unit Category	JEA Unit
CT Gas	Brandy Branch:001
Combined Cycle	Brandy Branch:CC1
CT Gas	Greenland Energy Center:GT1
CT Gas	Greenland Energy Center:GT2
CT Gas	J D Kennedy:GT7
CT Gas	J D Kennedy:GT8
ST Coal	Northside Generating:1
ST Coal	Northside Generating:2
CT Oil	Northside Generating:4
CT Oil	Northside Generating:5
CT Oil	Northside Generating:6
CT Oil	Northside Generating:GT3
ST Gas	Northside Generating:ST3
ST Coal	Scherer:4
Nuclear	Vogtle (GA):3
Nuclear	Vogtle (GA):4

Baselining JEA Units



Replacing SJRPP

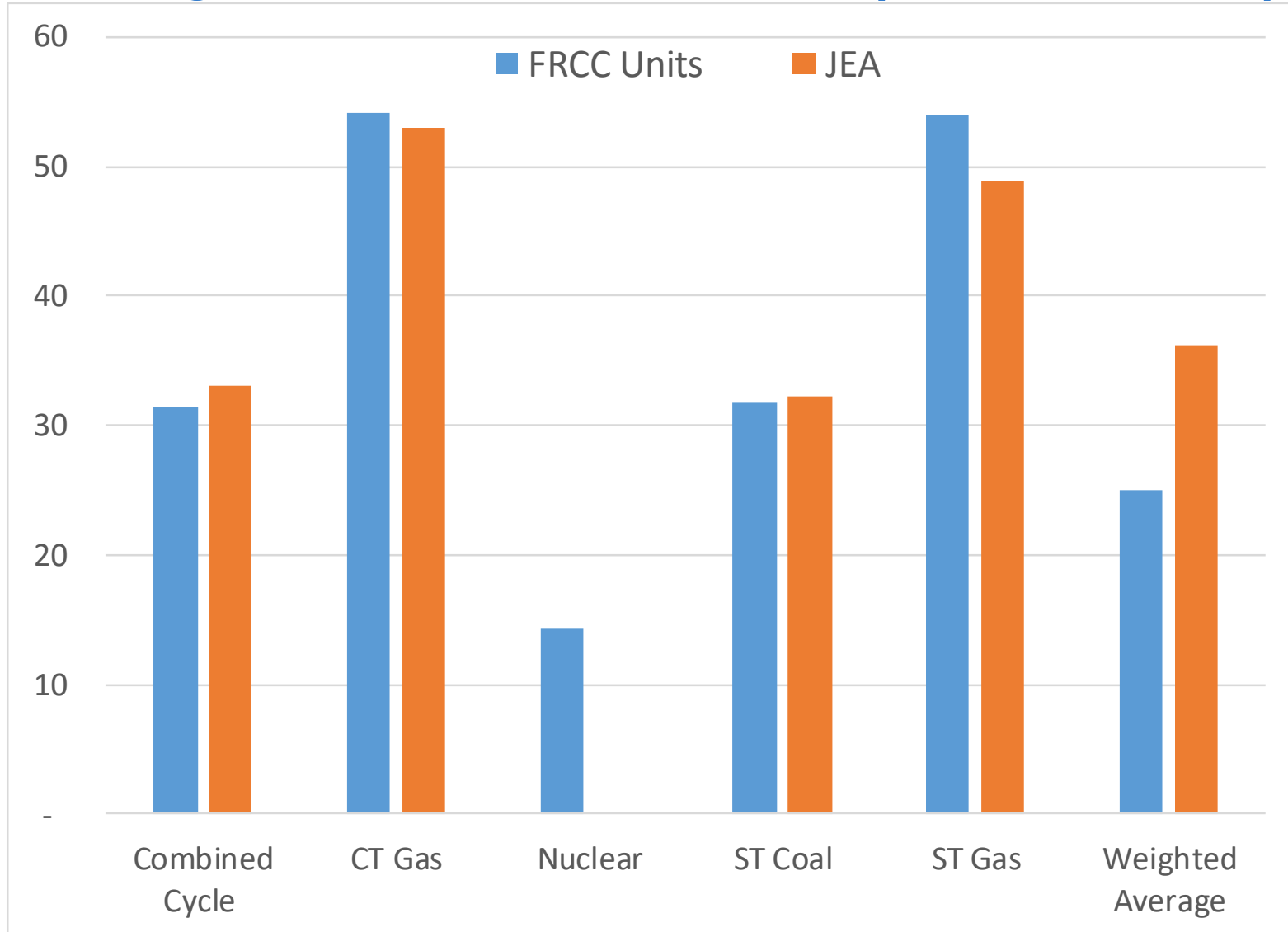


– 2019 Base vs 2017 Actuals

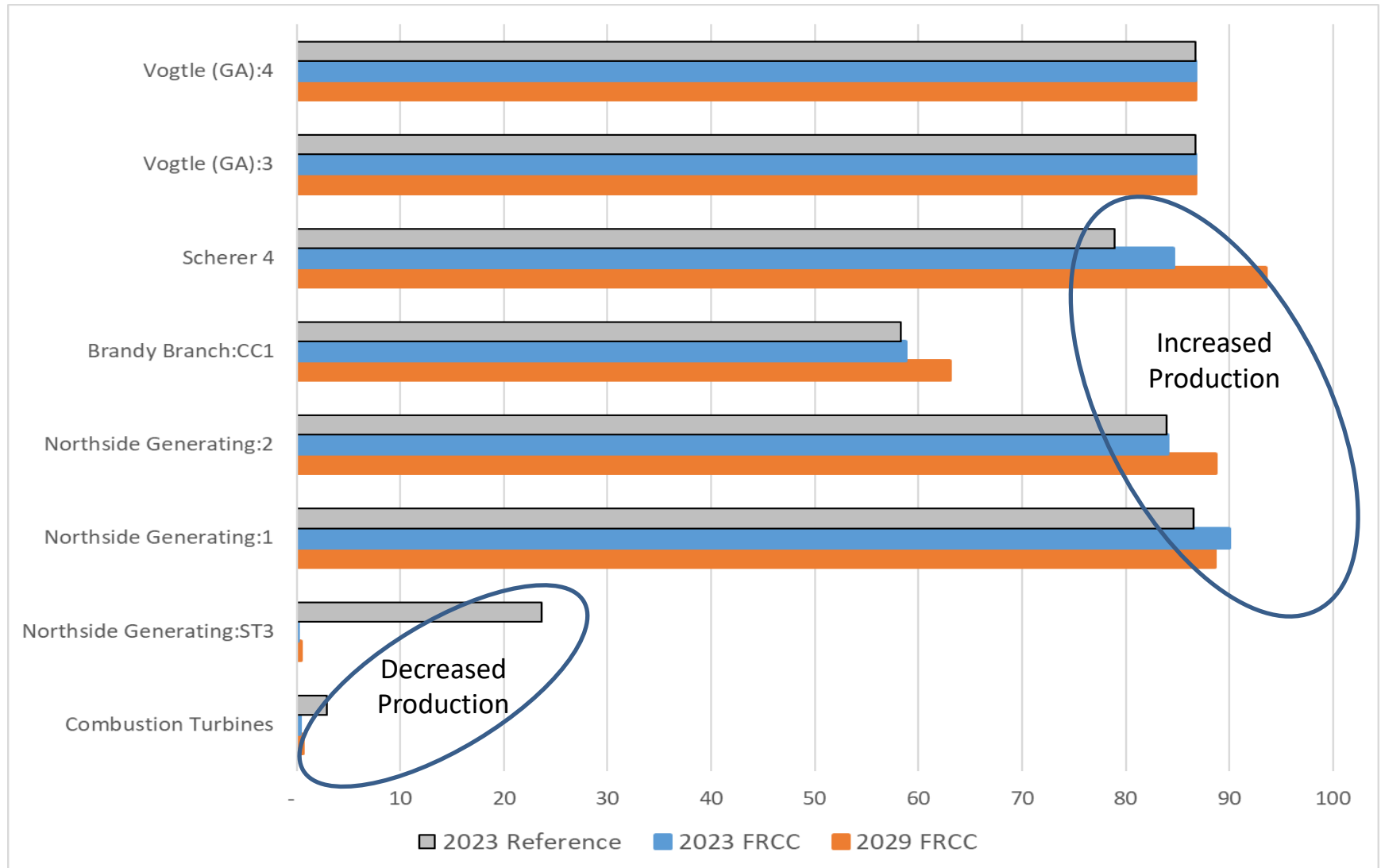
JEA Base 2019 – Starts & Run Time

JEA Unit	Number of Starts	Hours at Minimum	Operating Hours
Northside Generating:1	6	1,385	8,498
Scherer:4	8	544	8,316
Northside Generating:2	11	461	8,009
Brandy Branch:CC1	7	135	6,822
Northside Generating:ST3	75	2,373	5,710
J D Kennedy:GT7	369	2,077	2,957
Greenland Energy Center:GT1	240	1,229	1,983
J D Kennedy:GT8	243	1,321	1,807
Greenland Energy Center:GT2	193	965	1,429
Brandy Branch:001	41	172	271
Northside Generating:4	-	-	-
Northside Generating:5	-	-	-
Northside Generating:6	-	-	-
Northside Generating:GT3	-	-	-

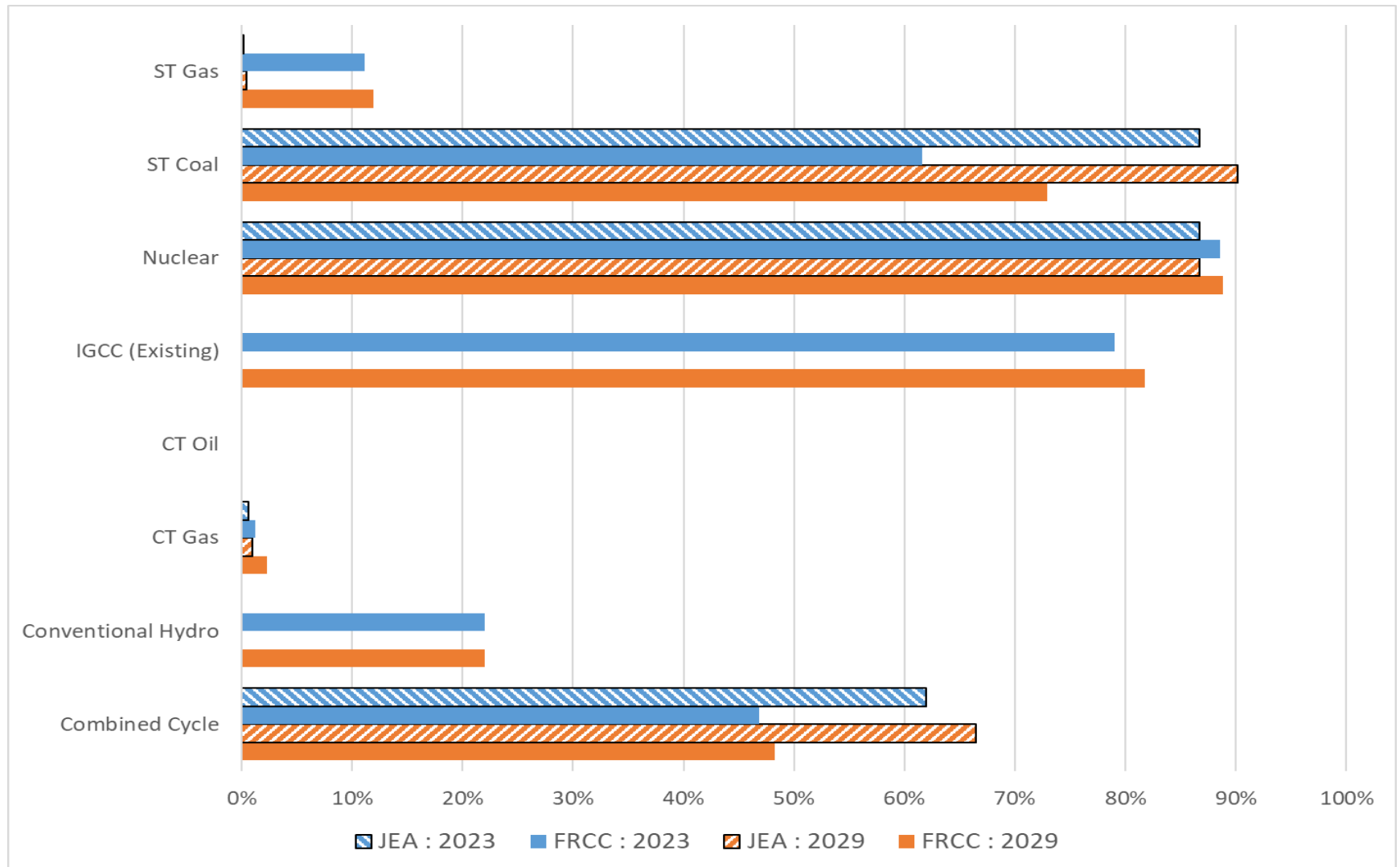
Average Production Costs (2019\$/MWh)



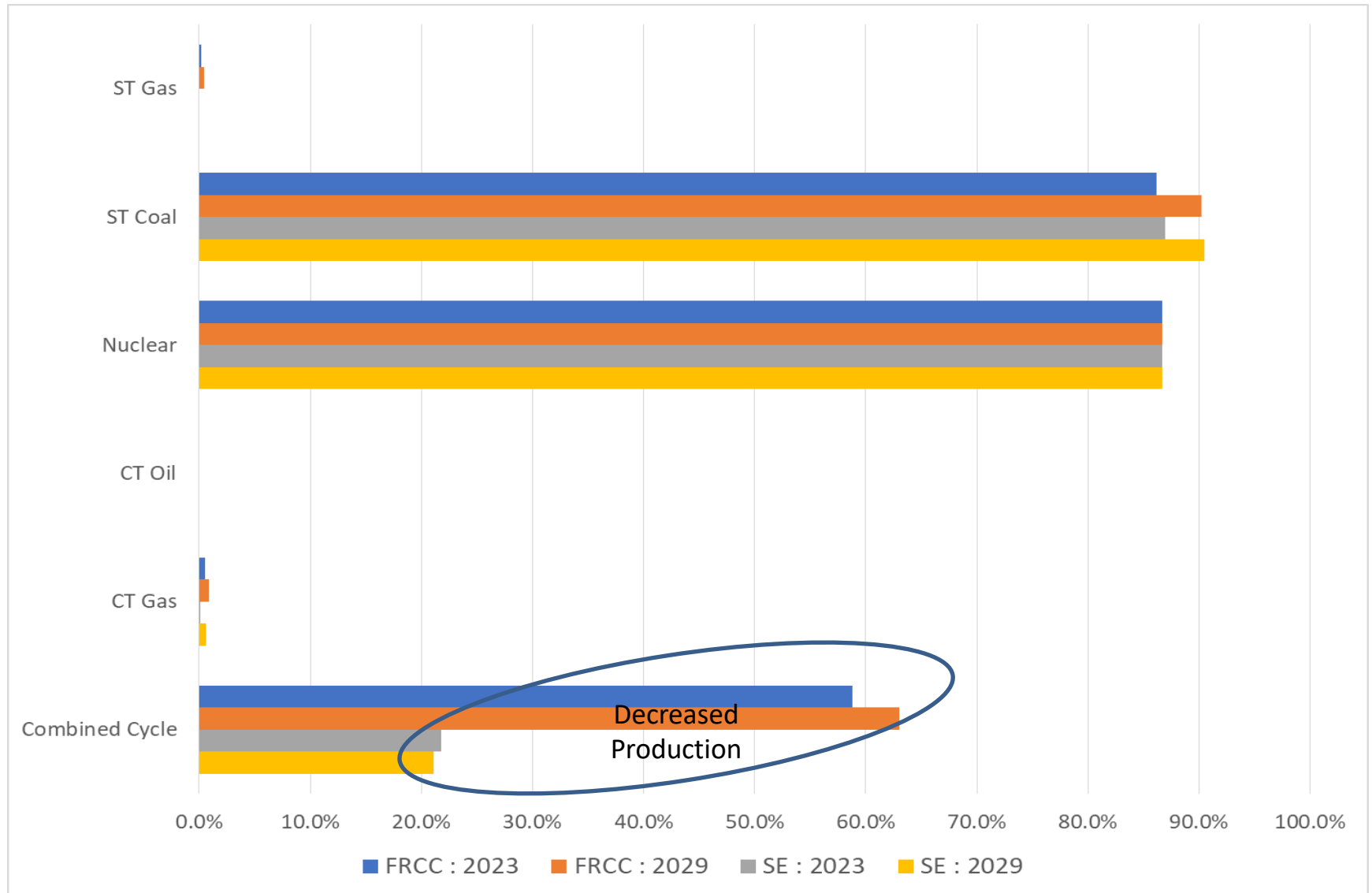
JEA Capacity Factors – Reference vs FRCC



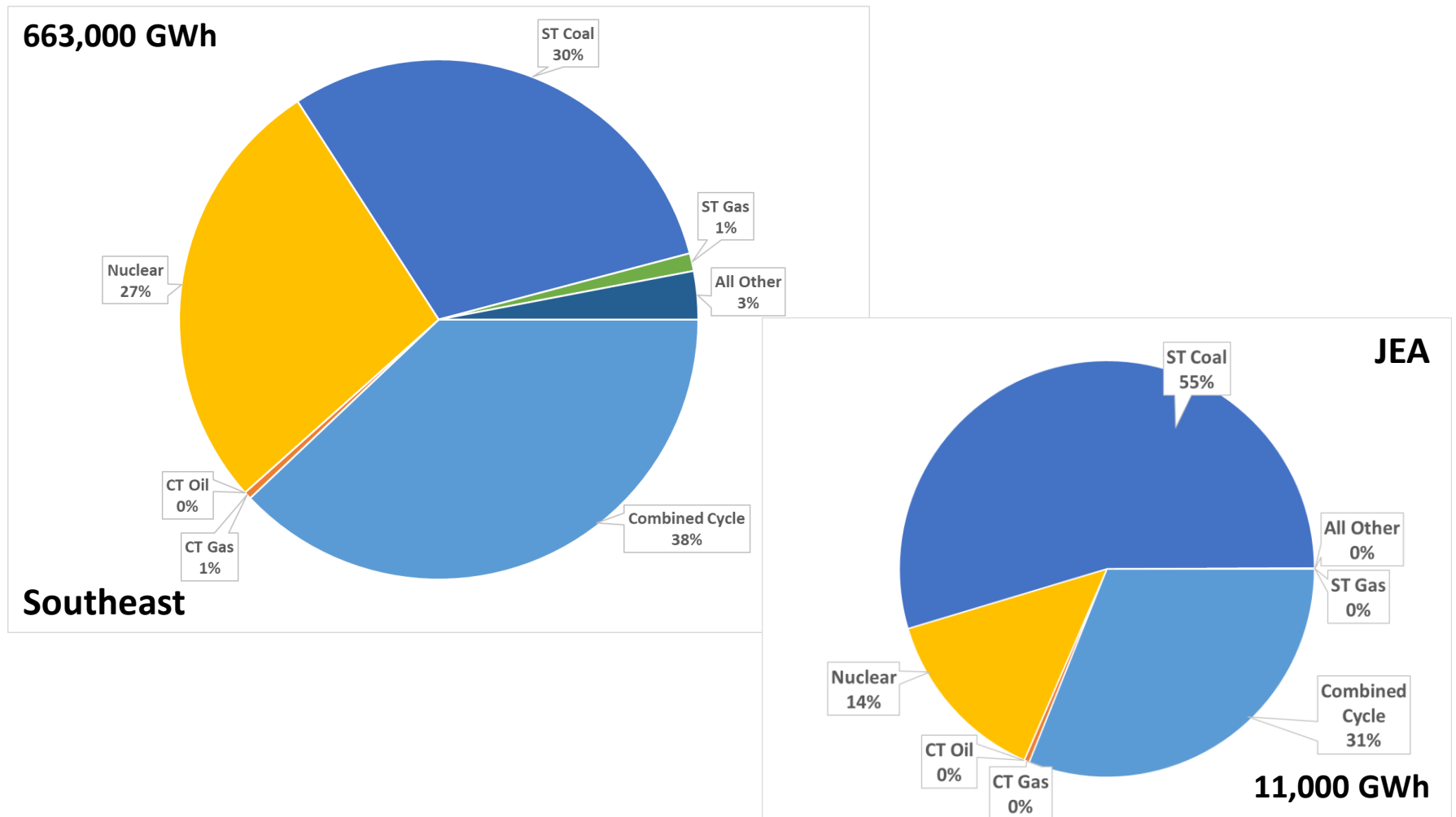
FRCC Scenario Capacity Factors



SE vs FRCC – JEA Capacity Factors

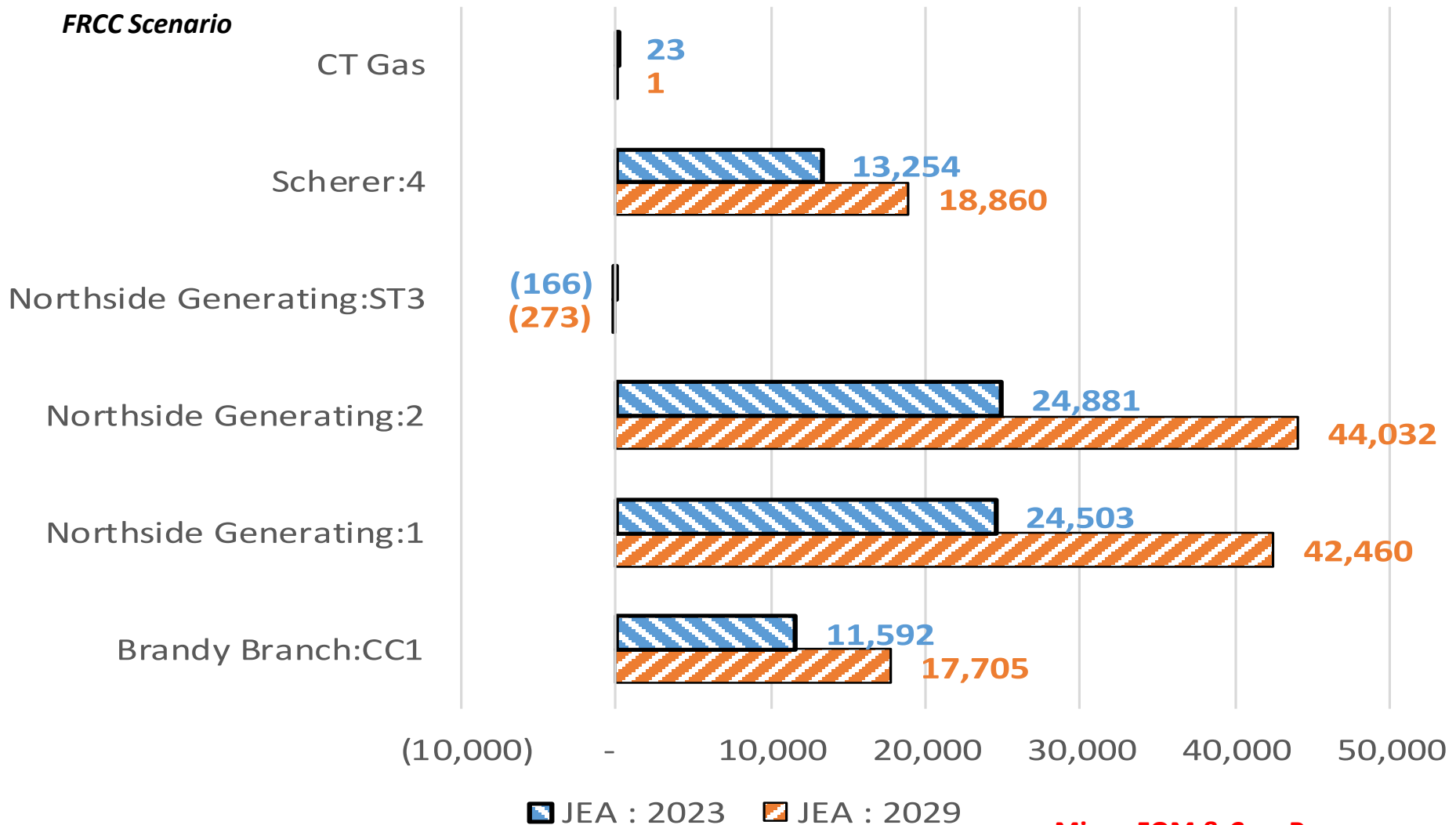


2023 FRCC Scenario Generation



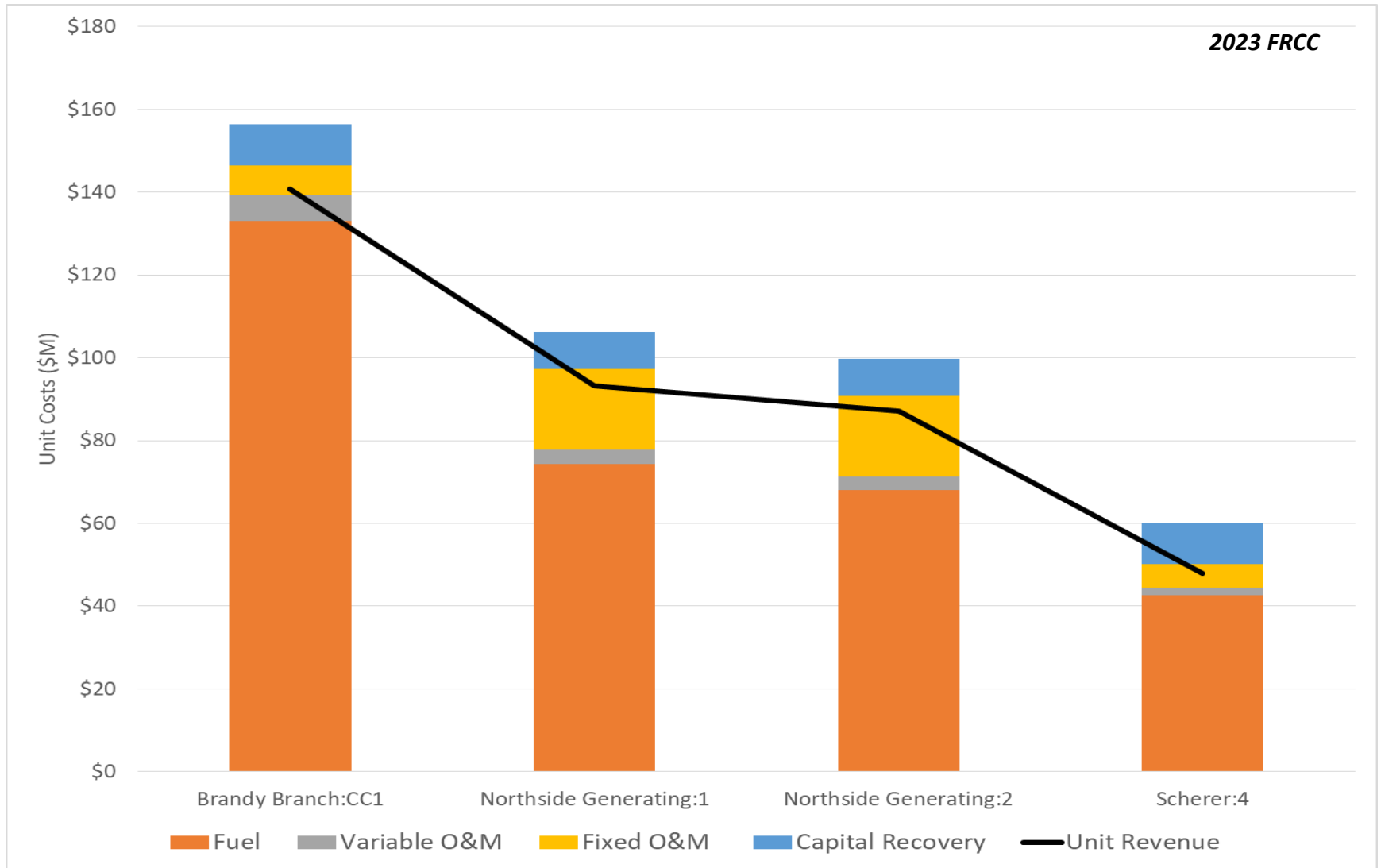
Gross Operating Profit (\$000)

FRCC Scenario

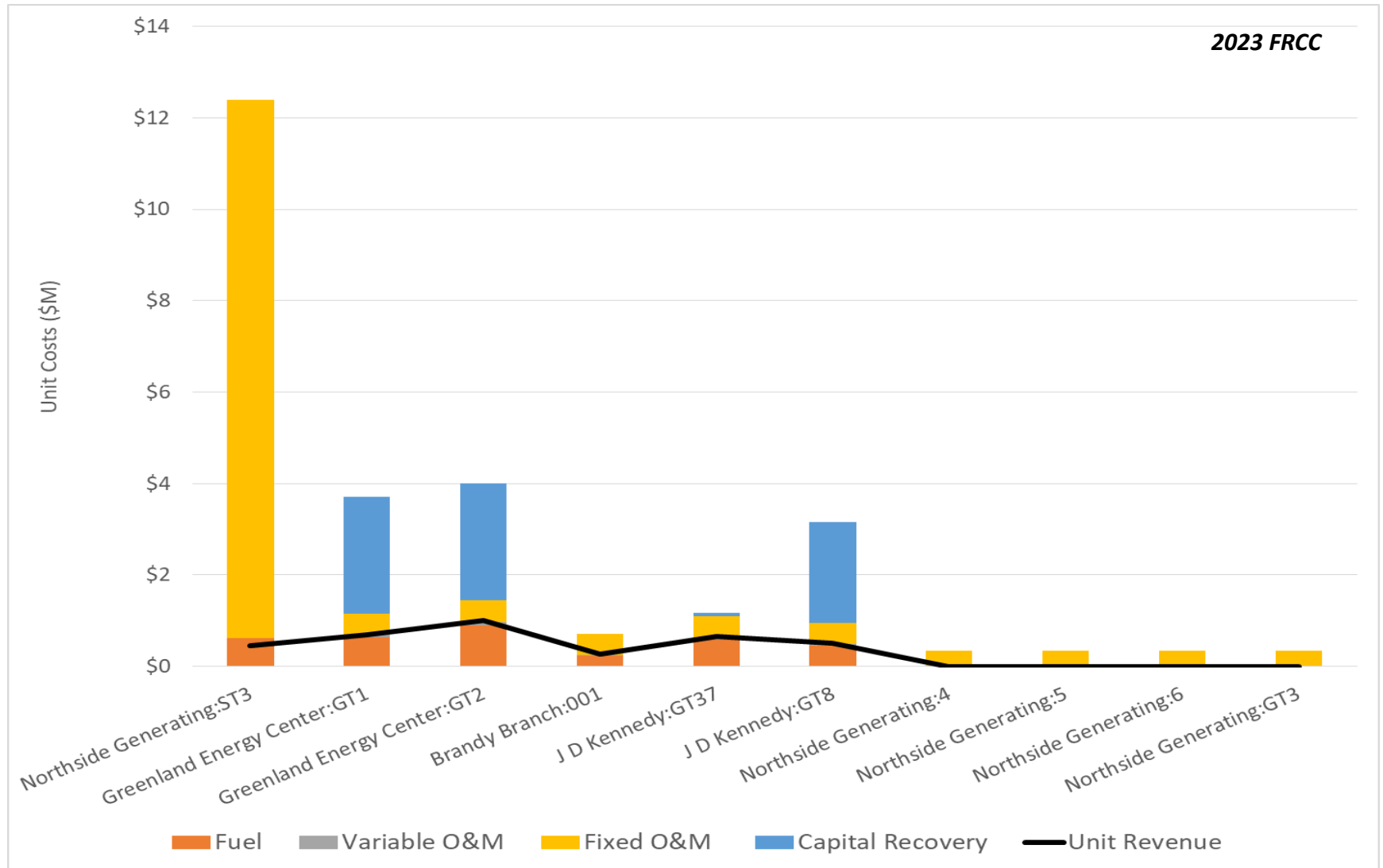


Minus FOM & Cap. Recovery

Unit Cost Components



Unit Cost Components



ISO Capacity Markets

▶ PJM Base Residual Auction for 2021/2022

2021/22 Auction	Rest of RTO	EMAAC	PSEG	BGE	ATSI	COMED
Capacity Performance (\$/MW-day)	140.0	165.7	204.3	200.3	171.3	195.6
Capacity Performance (\$/kW-year)	51.1	60.5	74.6	73.1	62.5	71.4

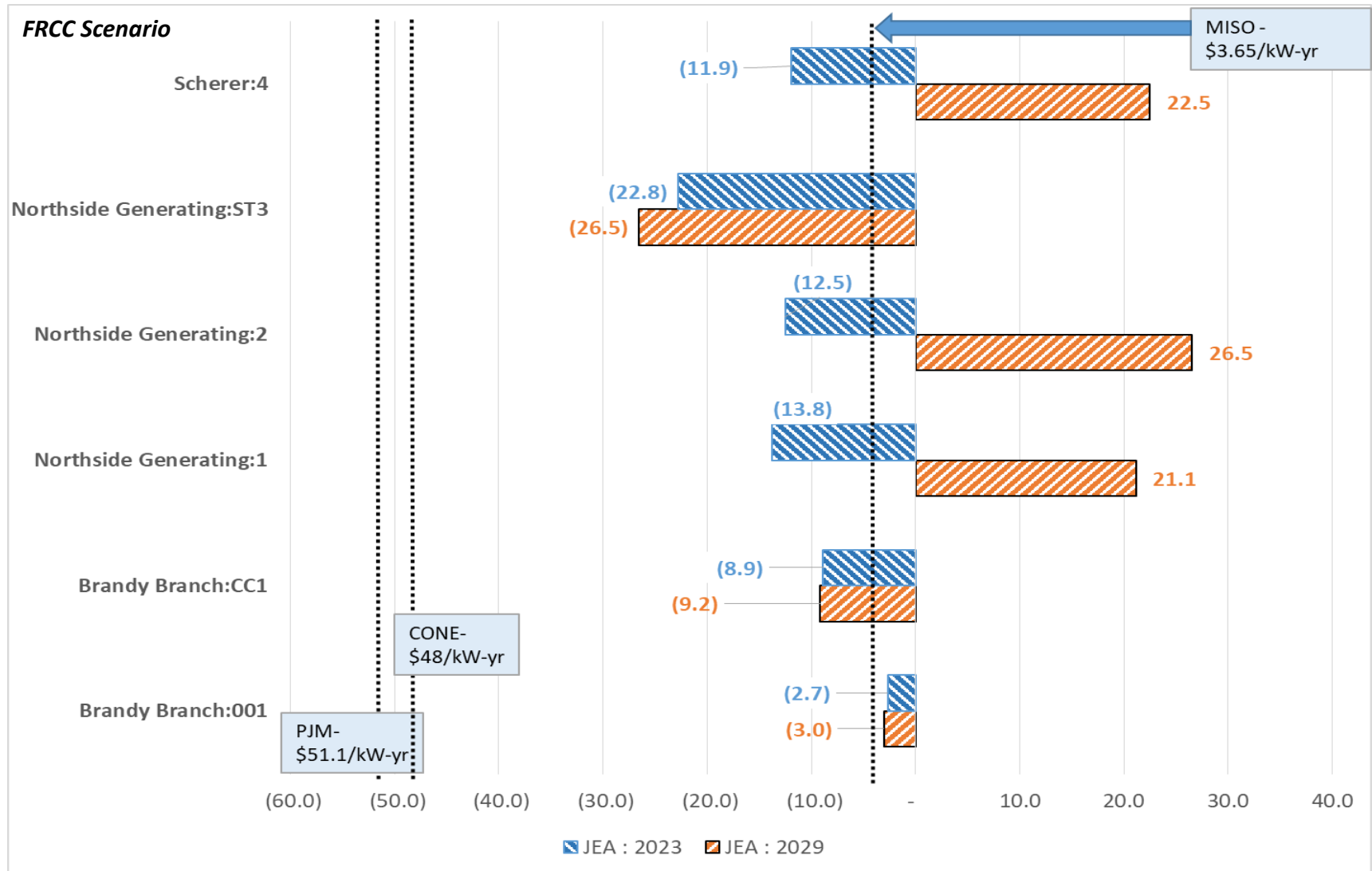
▶ MISO Capacity Auction 2018/2019

- \$1/MW-Day - Zone 1 (Minnesota, Western Wisconsin, North Dakota)
- \$10/MW-Day - Rest of MISO

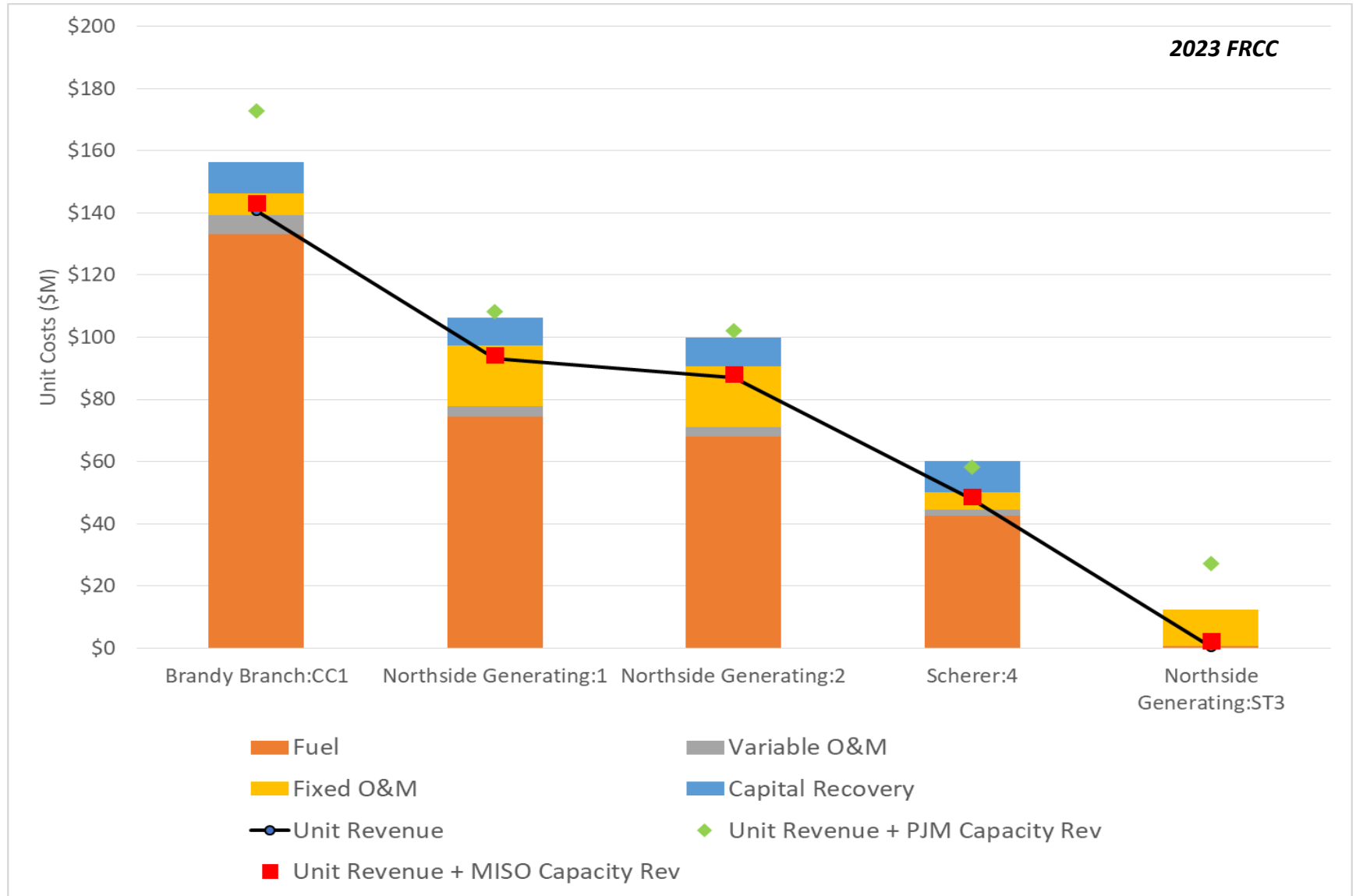
▶ Cost of New Entry (CONE)

- 1xF Class
- Fixed O&M – 2.83 \$/kW-yr
- Capital Cost – 590 \$/kW
- 20 year levelized - \$48 \$/kW-yr

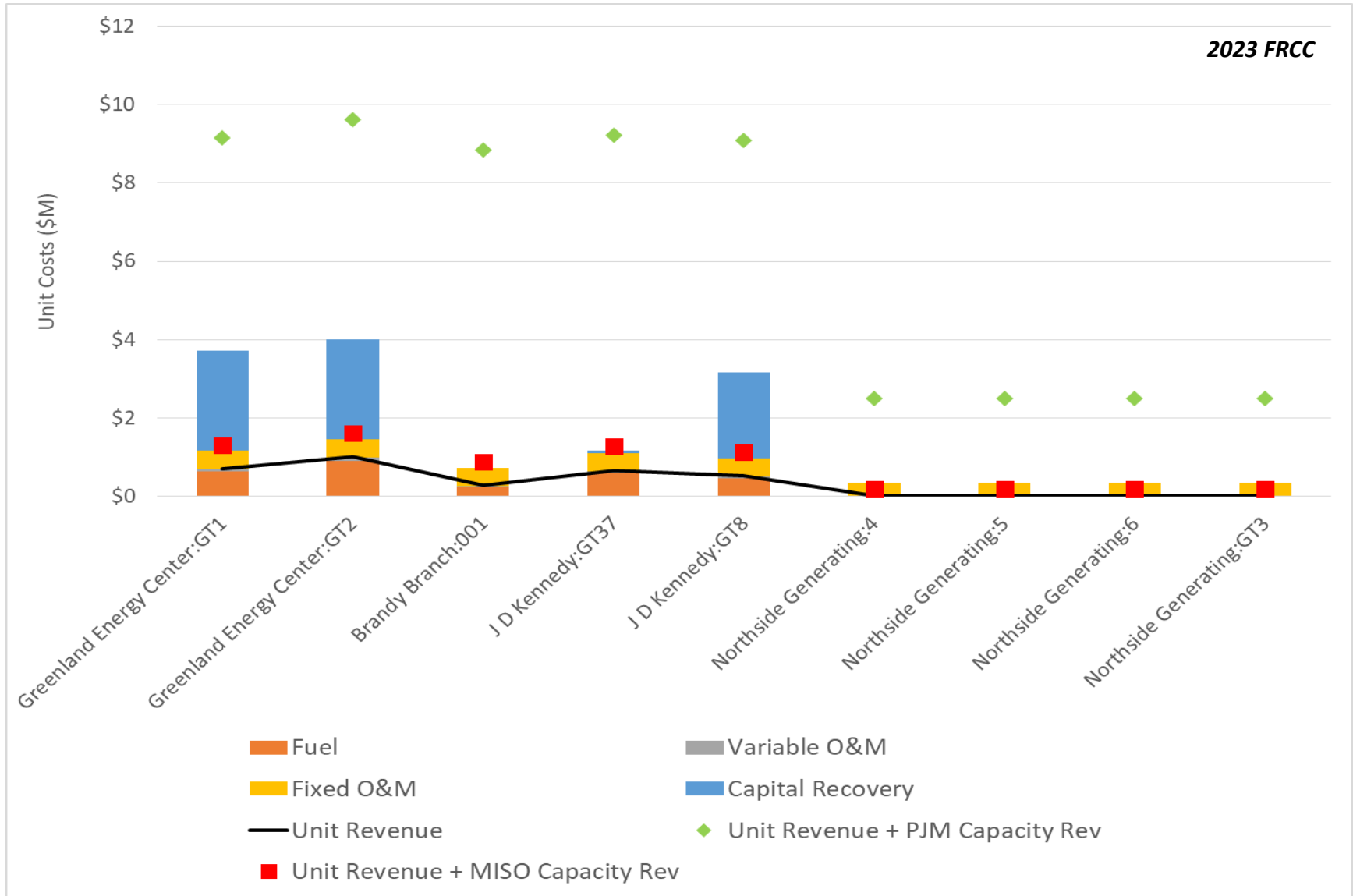
Net Plant Profitability (\$/kW-Yr)



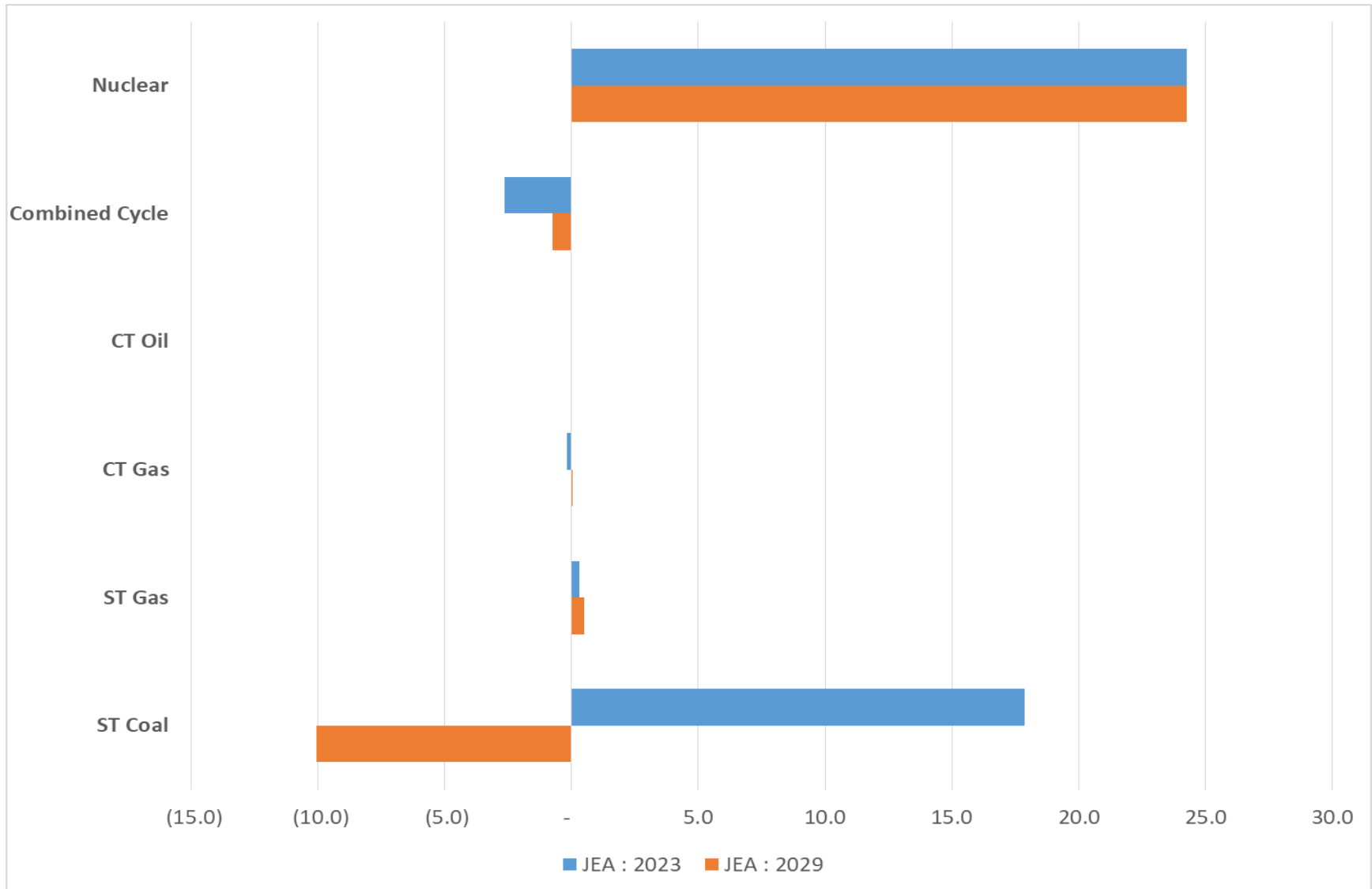
Unit Cost Components



Unit Cost Components



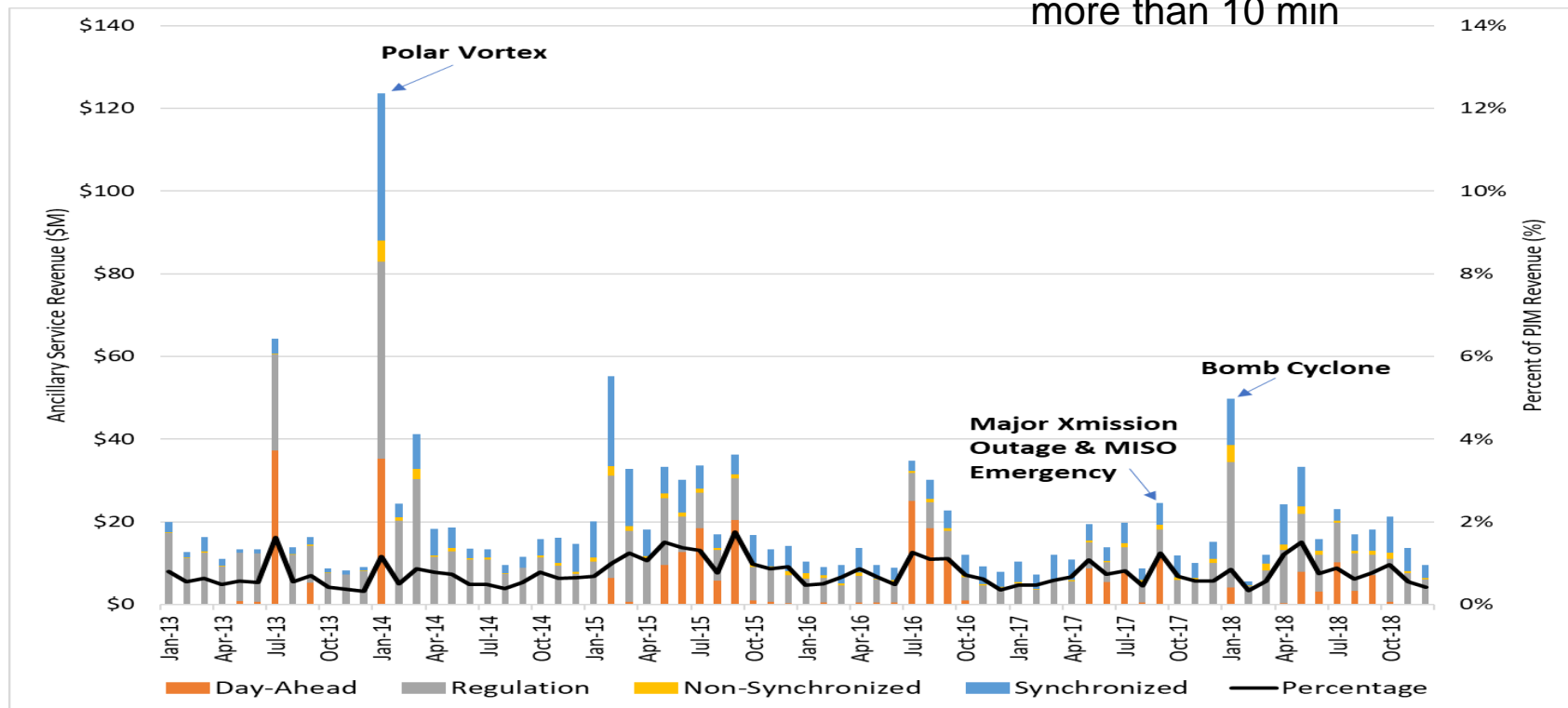
SE vs FRCC – Net Plant Profitability Delta (\$/kW-yr)



Other Revenue Streams

► PJM Ancillary Service Market

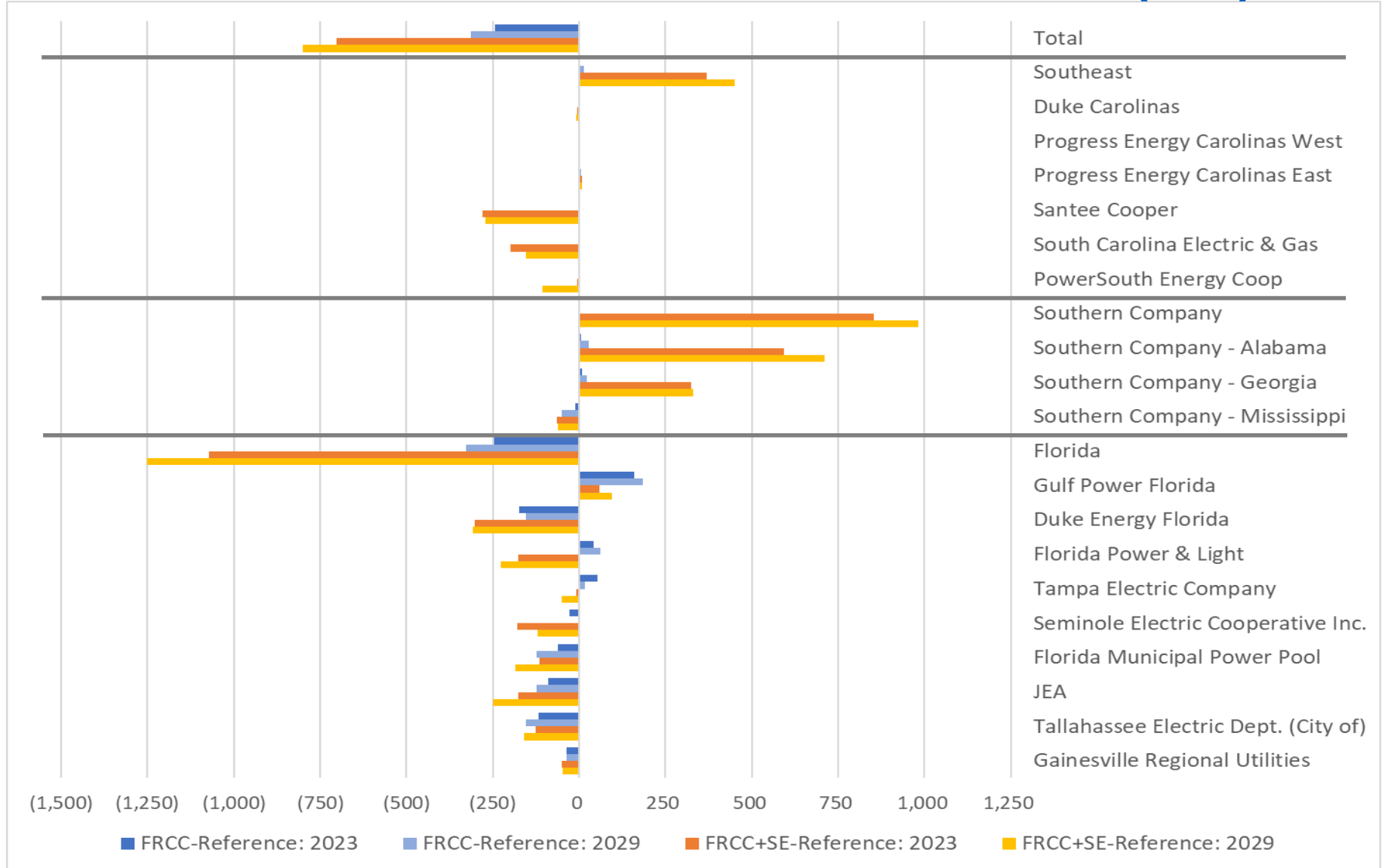
- Day Ahead Operational Reserves
 - Respond within 30 min
- Regulation Reserves
 - Provide real-time regulation
- Synchronized Reserves
 - Synchronized to grid and can respond within 10 min
- Non-Synchronized Reserves
 - Respond to signal more after more than 10 min



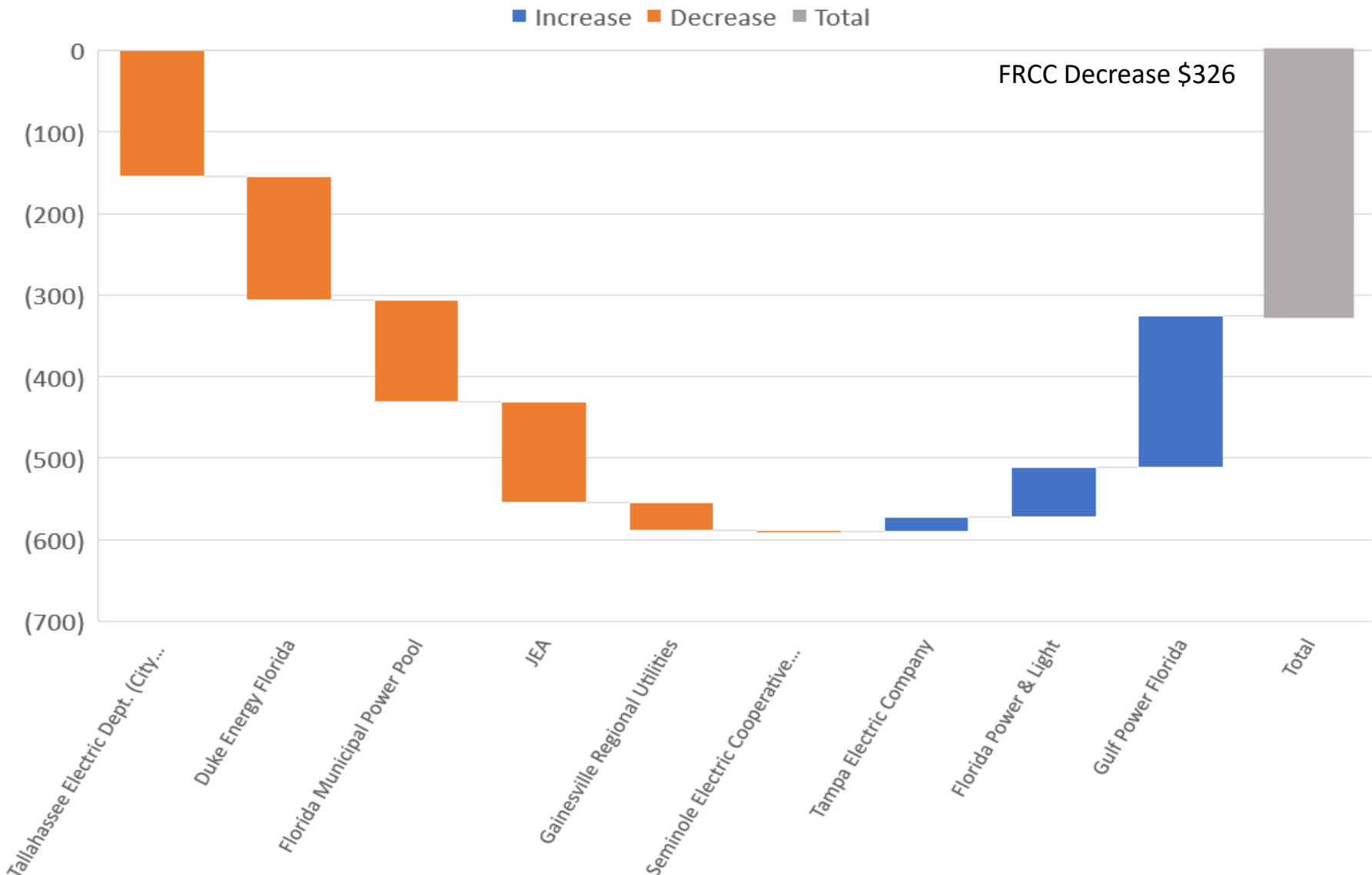
Production Cost (\$M)

Entity	Reference : 2023	Reference : 2029	FRCC : 2023	FRCC : 2029	Southeast : 2023	Southeast : 2029
Gainesville Regional Utilities	79	100	43	64	27	52
Tallahassee Electric Dept. (City of)	129	167	11	13	3	9
JEA	448	572	359	450	272	324
Florida Municipal Power Pool	602	788	542	663	486	604
Seminole Electric Cooperative Inc.	736	961	709	960	559	840
Tampa Electric Company	668	914	723	931	660	863
Florida Power & Light	3,514	4,454	3,556	4,516	3,339	4,226
Duke Energy Florida	1,333	1,622	1,161	1,469	1,031	1,314
Gulf Power Florida	390	490	550	675	449	585
Florida	7,899	10,067	7,653	9,741	6,827	8,817
Southern Company - Mississippi	562	689	551	639	498	628
Southern Company - Georgia	2,091	2,631	2,100	2,653	2,416	2,963
Southern Company - Alabama	3,026	3,983	3,030	4,012	3,618	4,694
Southern Company	5,679	7,304	5,682	7,303	6,533	8,285
South Carolina Electric & Gas	724	950	723	954	526	797
PowerSouth Energy Coop	305	404	305	404	298	298
Santee Cooper	639	803	639	803	359	532
Progress Energy Carolinas East	1,446	1,964	1,449	1,970	1,454	1,971
Progress Energy Carolinas West	7	17	7	17	7	17
Duke Carolinas	2,740	3,355	2,738	3,359	2,734	3,348
Southeast	11,541	14,797	11,543	14,811	11,911	15,248
Total	19,440	24,864	19,196	24,552	18,738	24,064

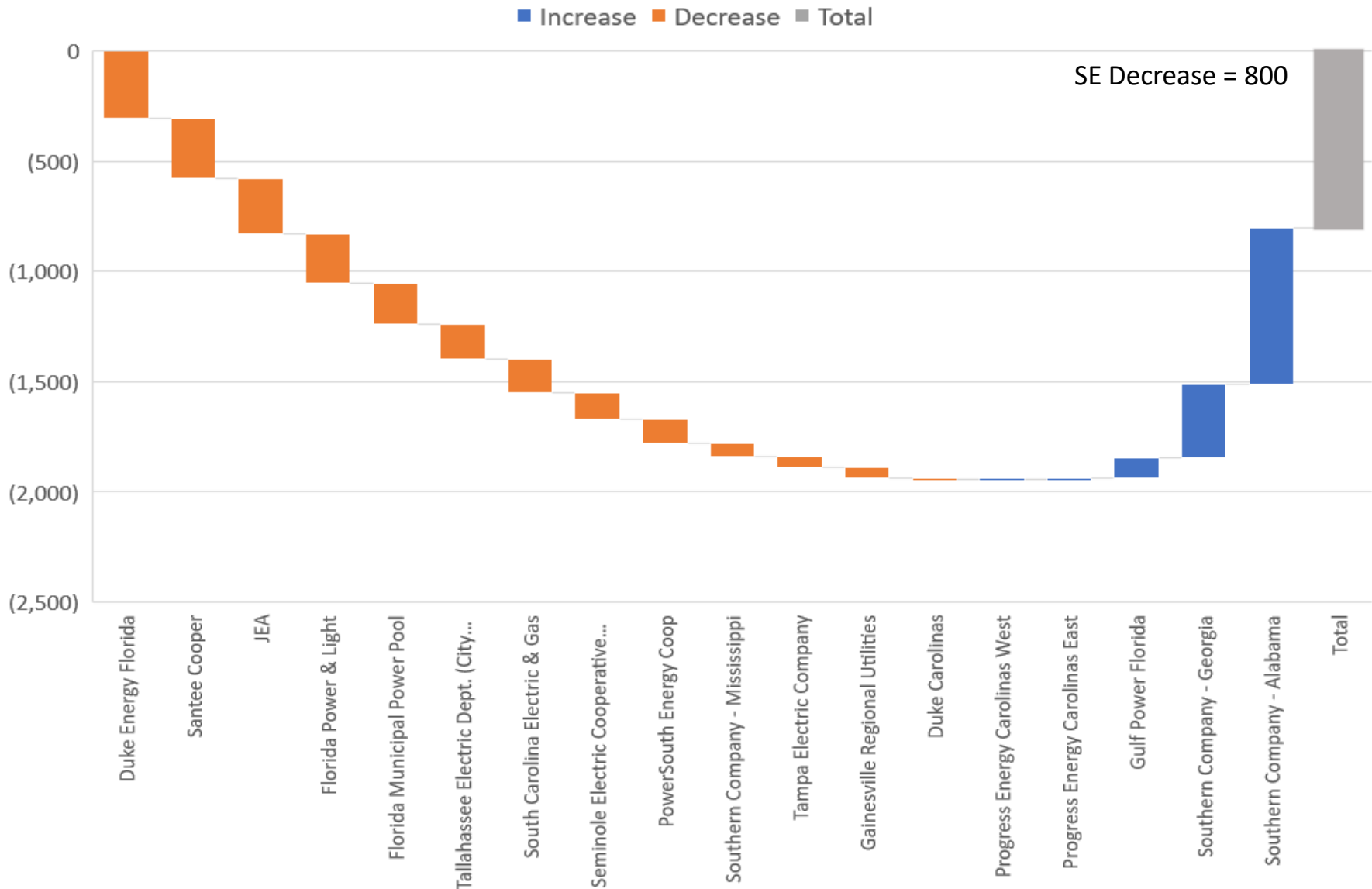
Delta to Reference Production Cost (\$M)



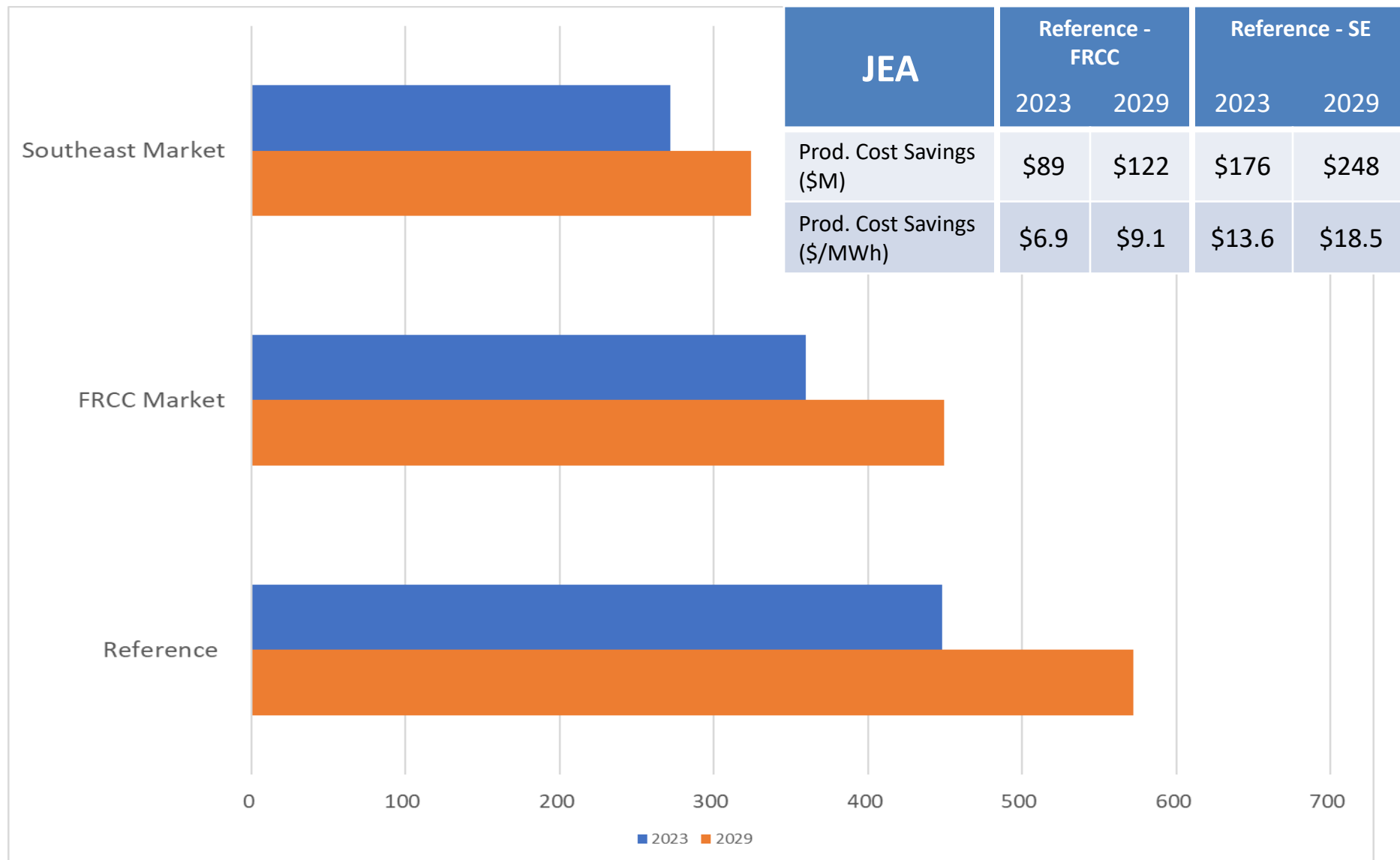
2029 - FRCC Delta to Reference Production Cost (\$M)



2029 - SE Delta to Reference Production Cost (\$M)



JEA – Production Cost (\$M)



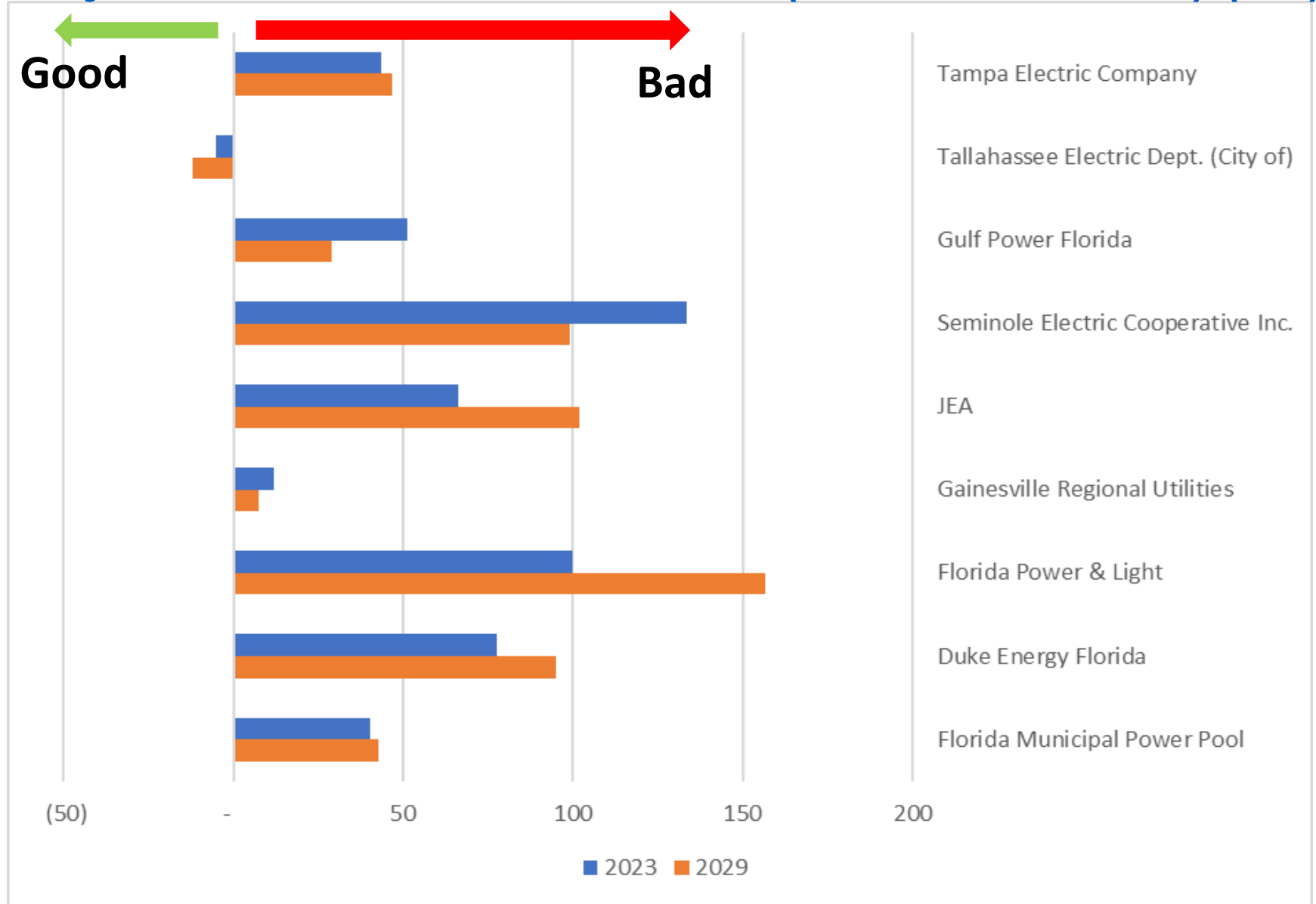
Adjusted Production Cost

- ▶ Adjusted Production Cost (APC) – **Production Costs** minus **Load Payments**
- ▶ **Production Costs** – the total variable costs incurred by a unit/plant to generate electricity
 - Fuel
 - Variable O&M
 - Emissions
- ▶ **Load Payments** – the cost to serve a utility's load
 - Calculated hourly by multiplying the load at each bus by its respective LMP
 - LMP (Location Marginal Pricing) – Incremental price of energy at load bus plus congestion and losses
















Adjusted Production Cost (\$M)

Entity	FRCC : 2023	FRCC : 2029	Southeast : 2023	Southeast : 2029
Gainesville Regional Utilities	(53)	(62)	(65)	(69)
Tallahassee Electric Dept. (City of)	(111)	(144)	(106)	(132)
JEA	(184)	(268)	(250)	(370)
Florida Municipal Power Pool	(150)	(270)	(190)	(312)
Seminole Electric Cooperative Inc.	268	381	135	282
Tampa Electric Company	(169)	(279)	(213)	(326)
Florida Power & Light	(1,491)	(2,106)	(1,590)	(2,262)
Duke Energy Florida	(776)	(1,073)	(854)	(1,168)
Gulf Power Florida	58	48	7	19
Florida	(2,609)	(3,774)	(3,128)	(4,340)
Southern Company - Mississippi			7	(1)
Southern Company - Georgia			90	(5)
Southern Company - Alabama			(1,784)	(2,615)
Southern Company			(1,688)	(2,621)
South Carolina Electric & Gas			(402)	(458)
PowerSouth Energy Coop			(57)	(170)
Santee Cooper			(514)	(576)
Progress Energy Carolinas East			(1,096)	(1,478)
Progress Energy Carolinas West			(187)	(255)
Duke Carolinas			(1,687)	(2,897)
Southeast	0	0	(5,631)	(8,456)
Total	(2,609)	(3,774)	(8,759)	(12,796)
















Adjusted Production Cost Delta (FRCC-Southeast) (\$M)



High Level Observations – Status Quo
















2023/2029	Brandy Branch (CCGT)	Coal Units	Northside 3	CTs (Gas)	JEA
Unit Utilization					
Unit Profitability					
Market Outlook (Base Assumptions)					

High Level Observations – FRCC

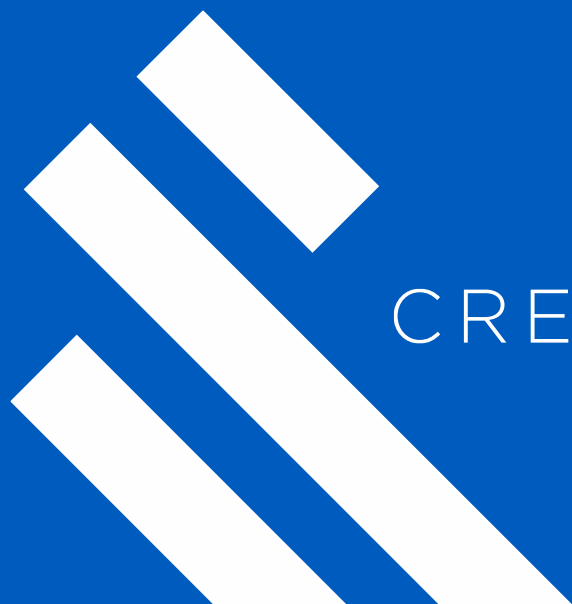
2023/2029	Brandy Branch (CCGT)	Coal Units	Northside 3	CTs (Gas)	JEA
Unit Utilization					
Unit Profitability					
Market Outlook (Base Assumptions)					

Good unit utilization, profit margins will get squeezed

High Level Observations – Southeast

2023/2029	Brandy Branch (CCGT)	Coal Units	Northside 3	CTs (Gas)	JEA
Unit Utilization					
Unit Profitability					
Market Outlook (Base Assumptions)					

Decreased unit utilization, Southern units pick up generation revenues, lower load payments



CREATE AMAZING.