

SPO PLANNING ANALYSIS

2015 NEW ORLEANS IRP - DRAFT

Modeling Overview

FEBRUARY 26, 2015

NOTE: ALL IRP MATERIALS ARE PRELIMINARY & SUBJECT TO CHANGE PRIOR TO THE FINAL REPORT FILING.



OVERVIEW OF THE PORTFOLIO ANALYTICS

The following topics will be discussed:

- Resource Actions from 2012 IRP
- Market Modeling
- Demand-Side Resource Optimization
- Supply-Side Resource Evaluation

RESOURCE ACTIONS FROM 2012 IRP

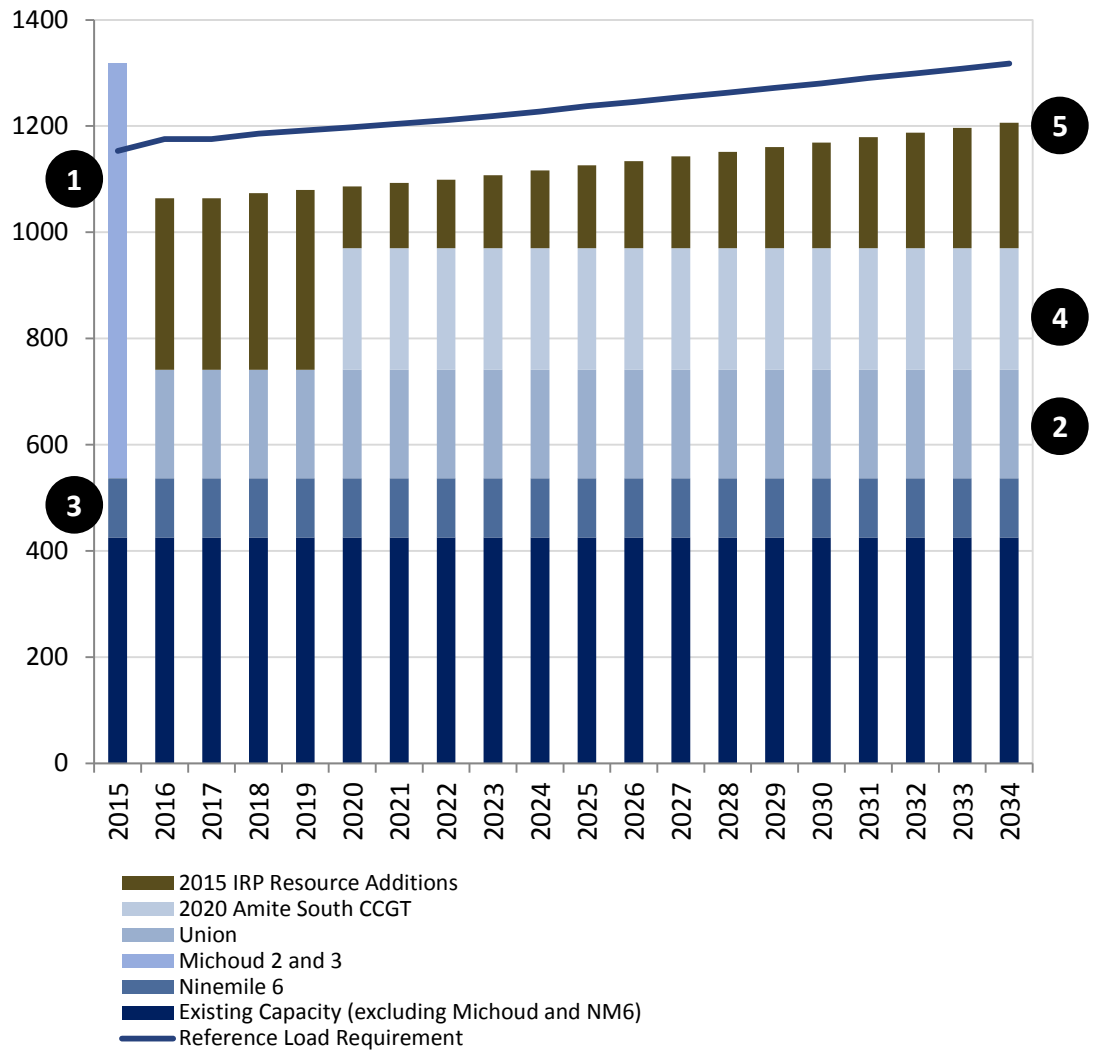
2012 IRP

- Supply Side Existing Resources
 - 1 Decision to deactivate Michoud 2 and 3
 - 2 Market opportunity for Union CCGT partially addresses near-term need
- Supply Side New Resources
 - 3 Ninemile 6 addition in 2015
 - 4 Planned Amite South CCGT in 2020

2015 IRP

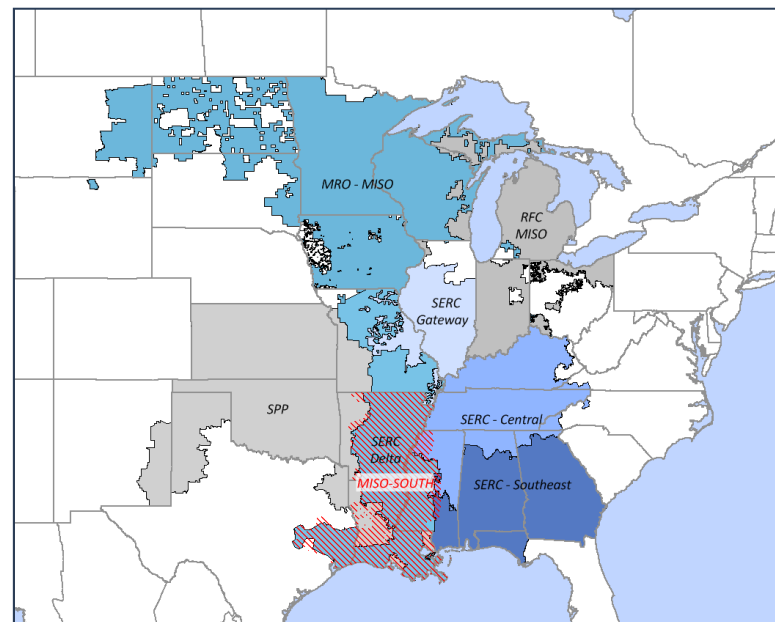
- Identify resources to fill remaining needs
 - 5 Evaluate DSM and Supply-Side alternatives

Industrial Renaissance Scenario



MISO MARKET MODELING

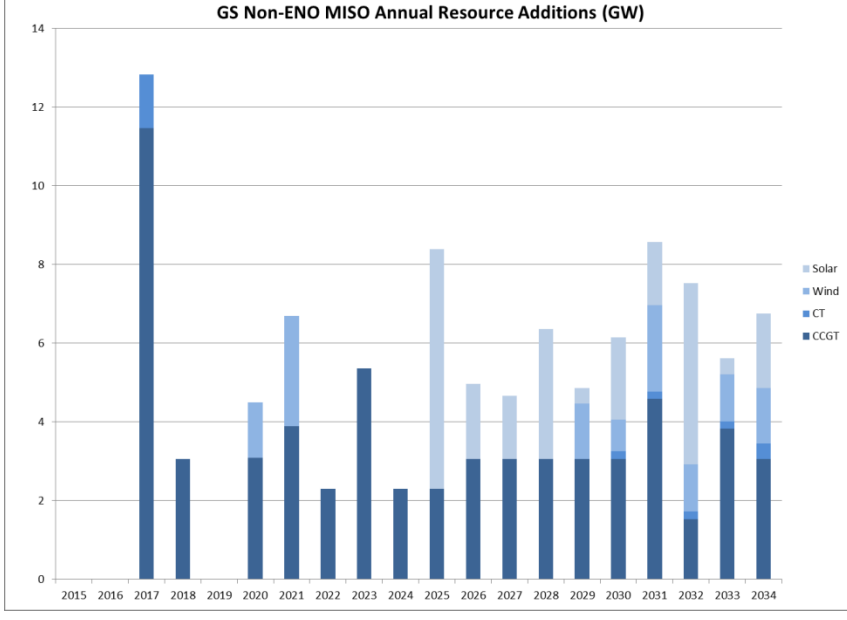
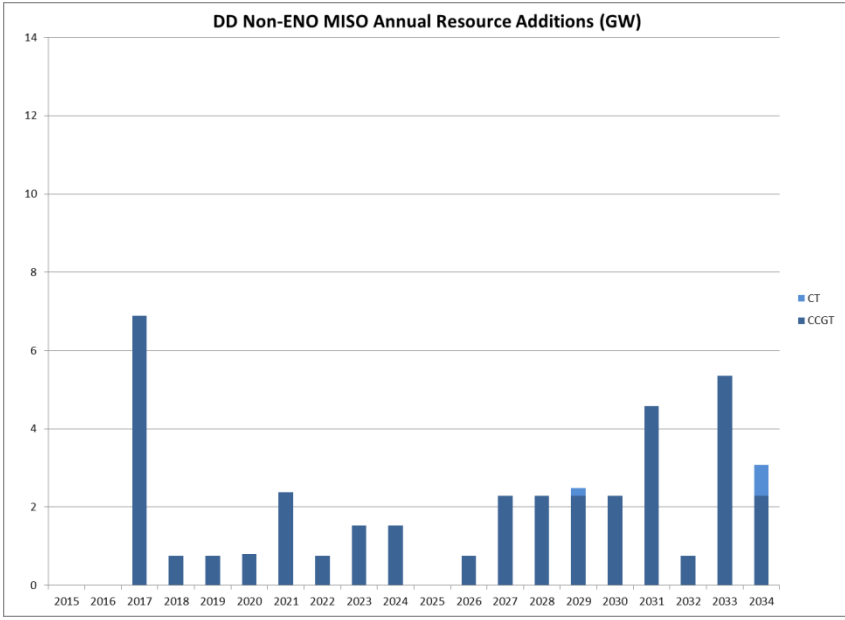
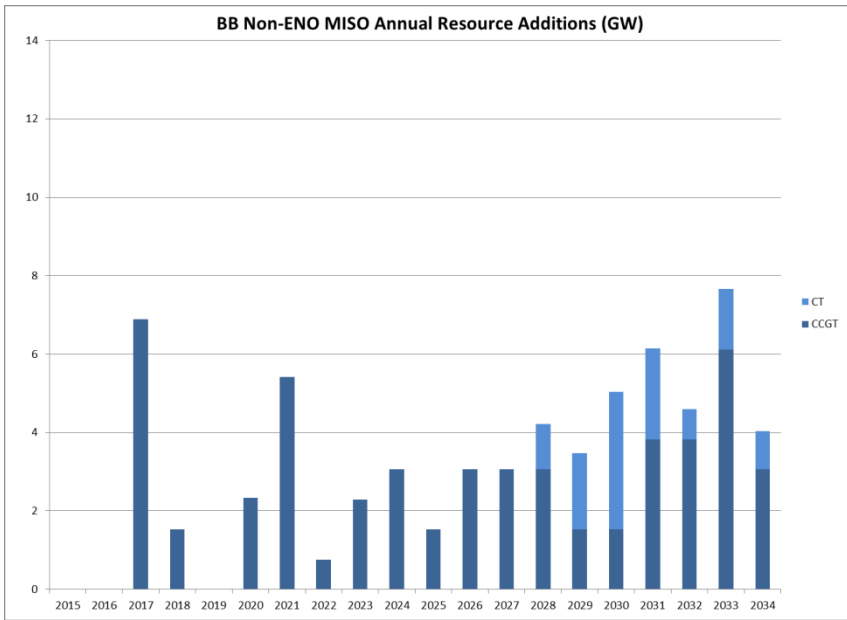
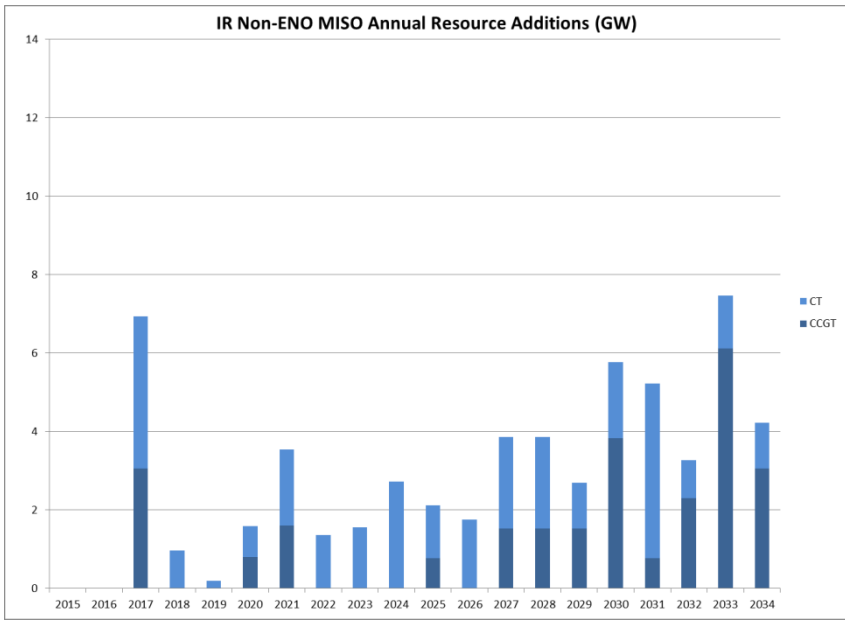
- The AURORA model is used to develop a projection of the future power market for each of the four scenarios.
- The AURORA model as configured for IRP analysis uses a zonal representation of MISO and 1st Tier markets.



**Results of MISO Market Modeling
(MISO North and South, excluding New Orleans)**

	Industrial Renaissance (Ref. Case)	Business Boom	Distributed Disruption	Generation Shift
CCGT	46%	81%	98%	62%
CT	55%	19%	3%	3%
Wind	0%	0%	0%	12%
Solar	0%	0%	0%	24%
Year of First Addition	2017	2017	2017	2017
Total GWs Added (through 2034)	59	65	39	101

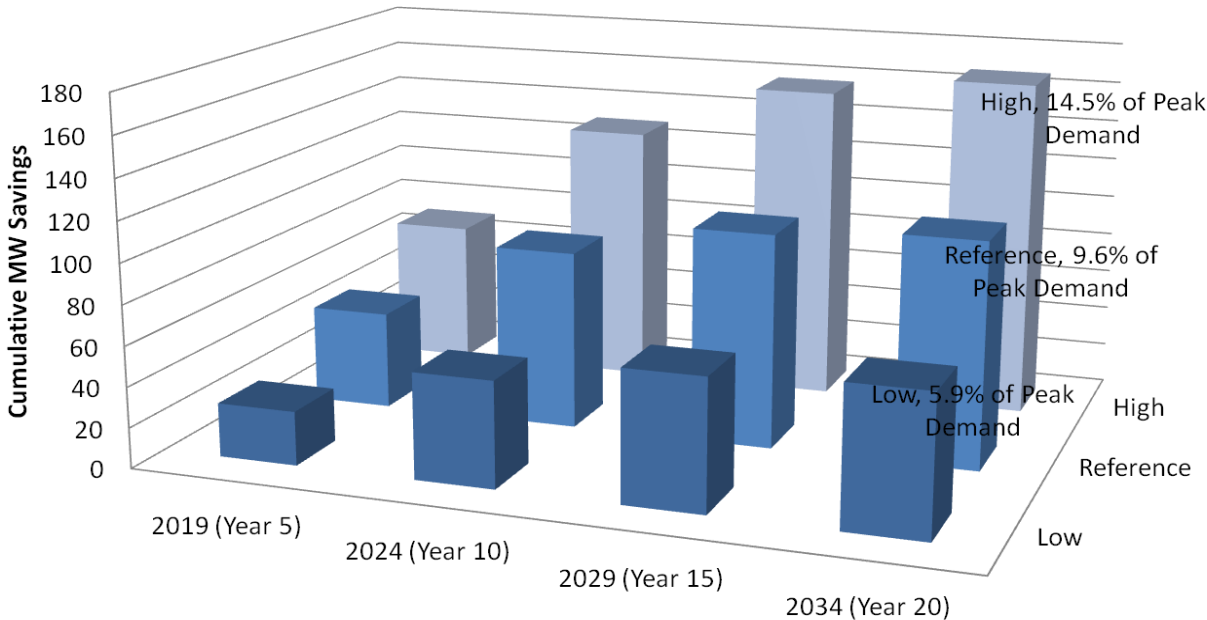
PROJECTED MISO MARKET ADDITIONS BY YEAR



DSM OVERVIEW

- ICF conducted a DSM Potential Study to develop high-level, long run achievable DSM program potential estimates for ENO over the 20-year planning horizon (2015-2034).
 - In total, 24 DSM programs were considered cost effective with a Total Resources Cost (“TRC”) ratio of 1.0 or better. ICF developed hourly loadshapes and program cost projections representing three levels – low, reference, and high – of achievable DSM program savings. These load shapes and costs are the demand-side management inputs in the IRP analysis.

ENO Cumulative Net MW Savings Potential, by Scenario

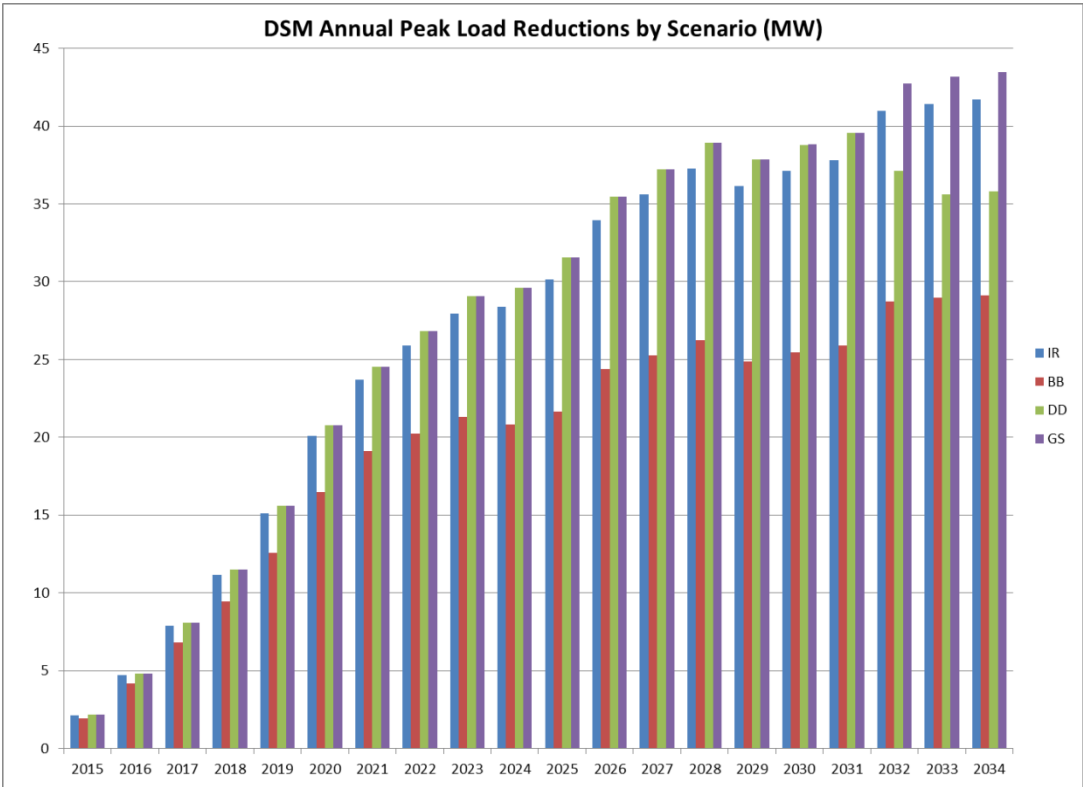


DSM OPTIMIZATION

- The AURORA Capacity Expansion Model was used to develop a DSM portfolio for each of the scenarios.
- The result of this process was an optimal DSM portfolio for each scenario.

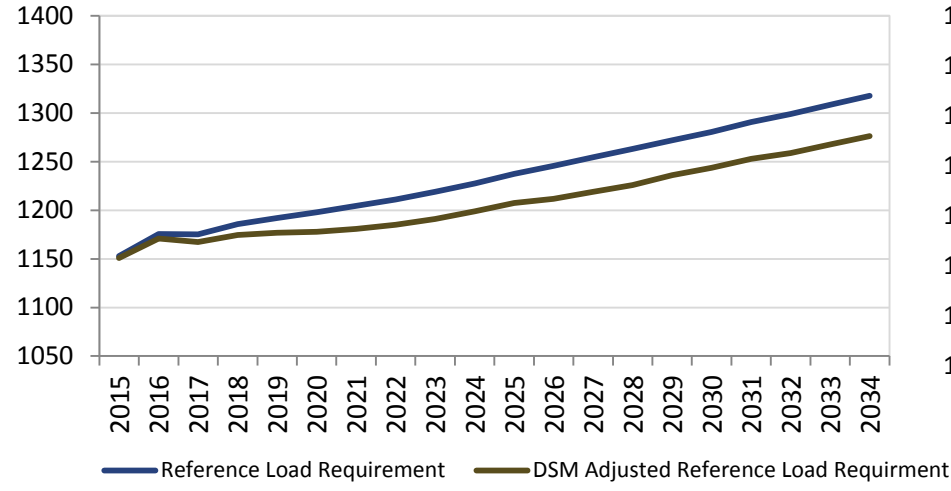
Portfolio Design Mix

	IR Portfolio	BB Portfolio	DD Portfolio	GS Portfolio
DSM	14 Programs	12 Programs	16 Programs	17 Programs
DSM Maximum (MW)	41	26	40	43

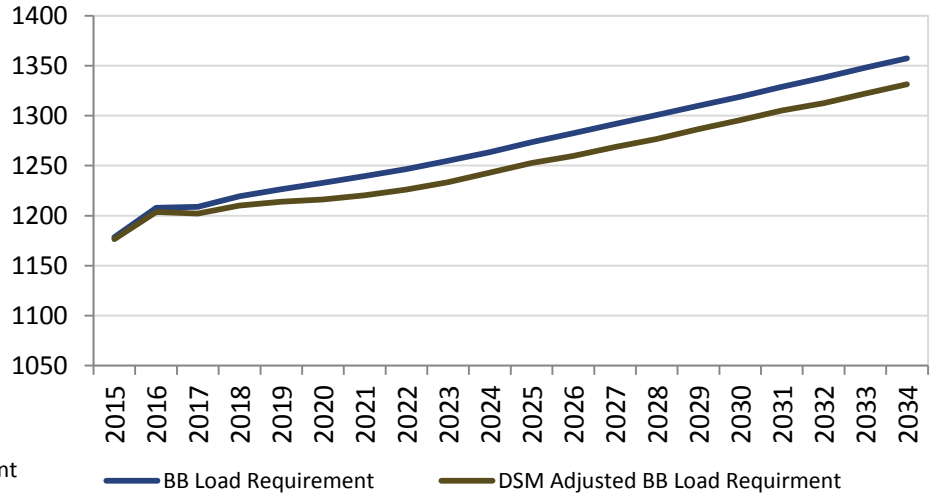


LOAD REQUIREMENTS FOR EACH SCENARIO

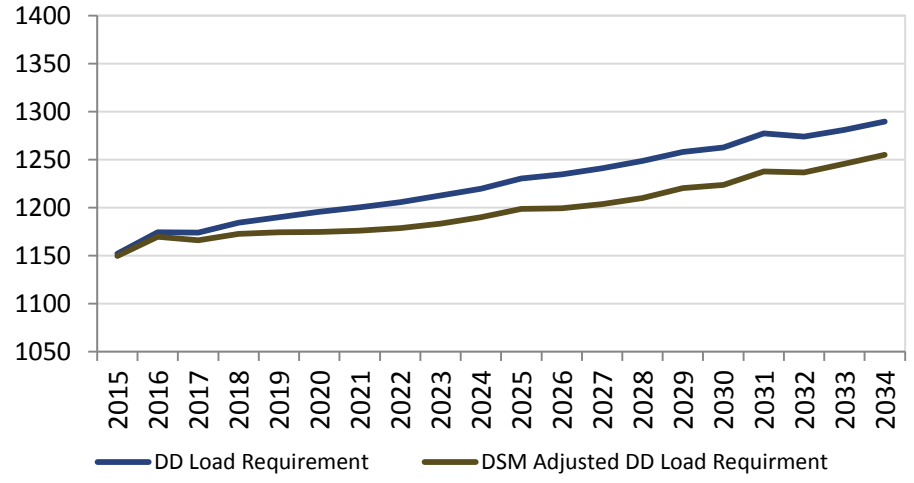
Industrial Renaissance Scenario (MW)



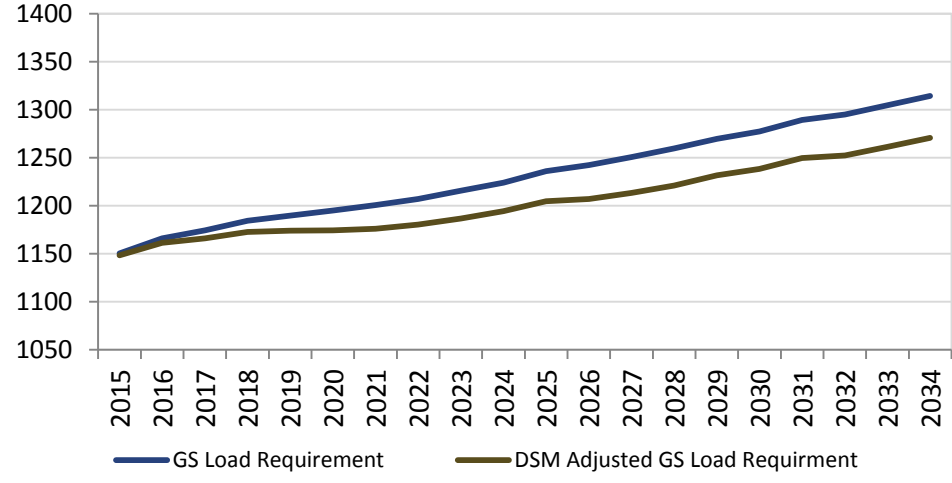
Business Boom Scenario (MW)



Distributed Disruption Scenario (MW)

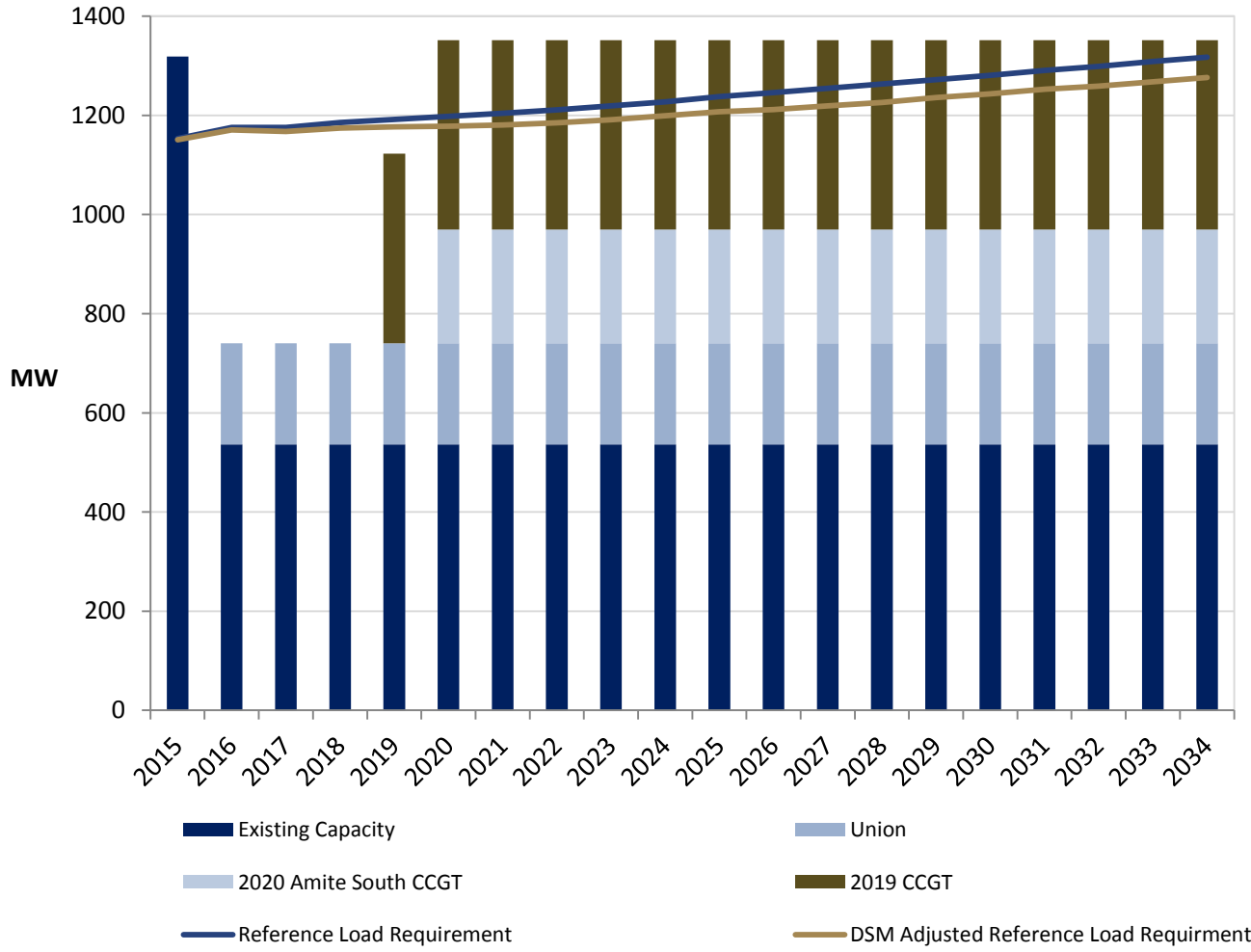


Generation Shift Scenario (MW)



AURORA CAPACITY EXPANSION - SUPPLY SIDE PORTFOLIOS

Industrial Renaissance, Business Boom, and Distributed Disruption Portfolio

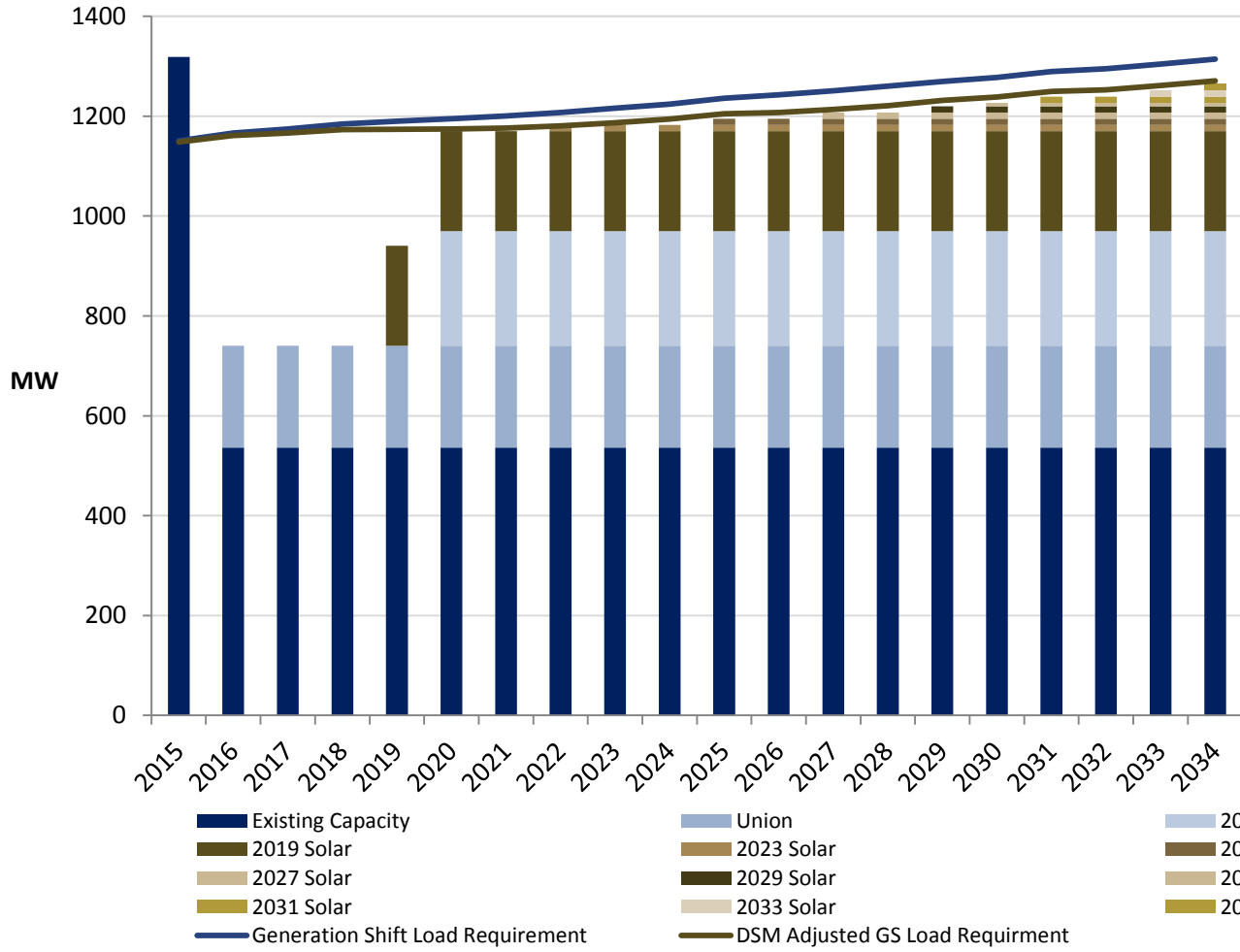


Resource Addition	Capacity (MW)
2019 CCGT	382

*Resources listed in blue are existing and planned resources. Resources additions listed in brown are the resources to be evaluated in the IRP.

AURORA CAPACITY EXPANSION - SUPPLY SIDE PORTFOLIOS

Generation Shift Portfolio

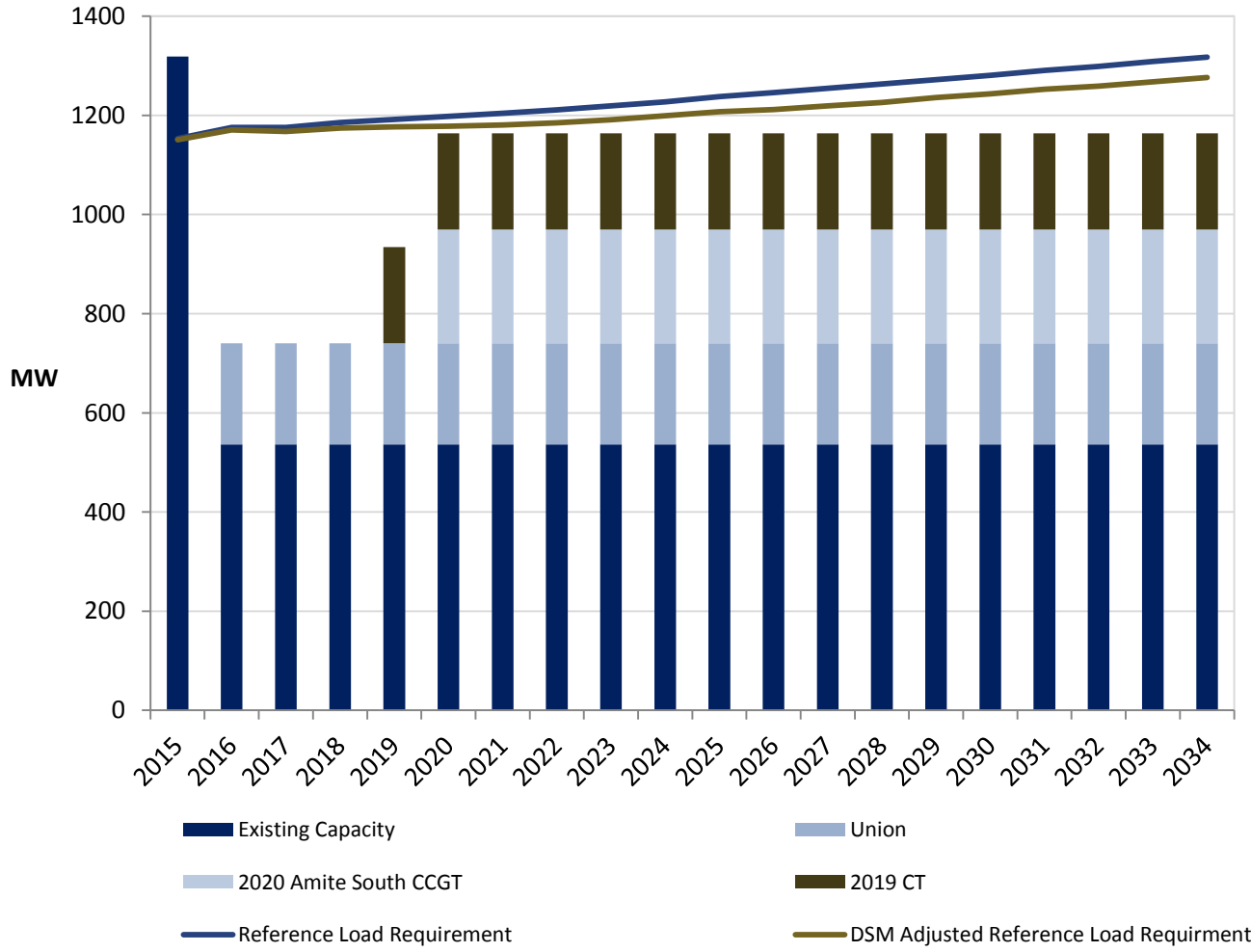


Resource Addition	Capacity (MW)	Effective Capacity (MW)
2019 Solar	800	200
2023 Solar	50	12.5
2025 Solar	50	12.5
2027 Solar	50	12.5
2029 Solar	50	12.5
2030 Wind	50	7
2031 Solar	50	12.5
2033 Solar	50	12.5
2034 Solar	50	12.5

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MANUAL PORTFOLIOS - SUPPLY SIDE PORTFOLIOS

Industrial Renaissance – CT Portfolio

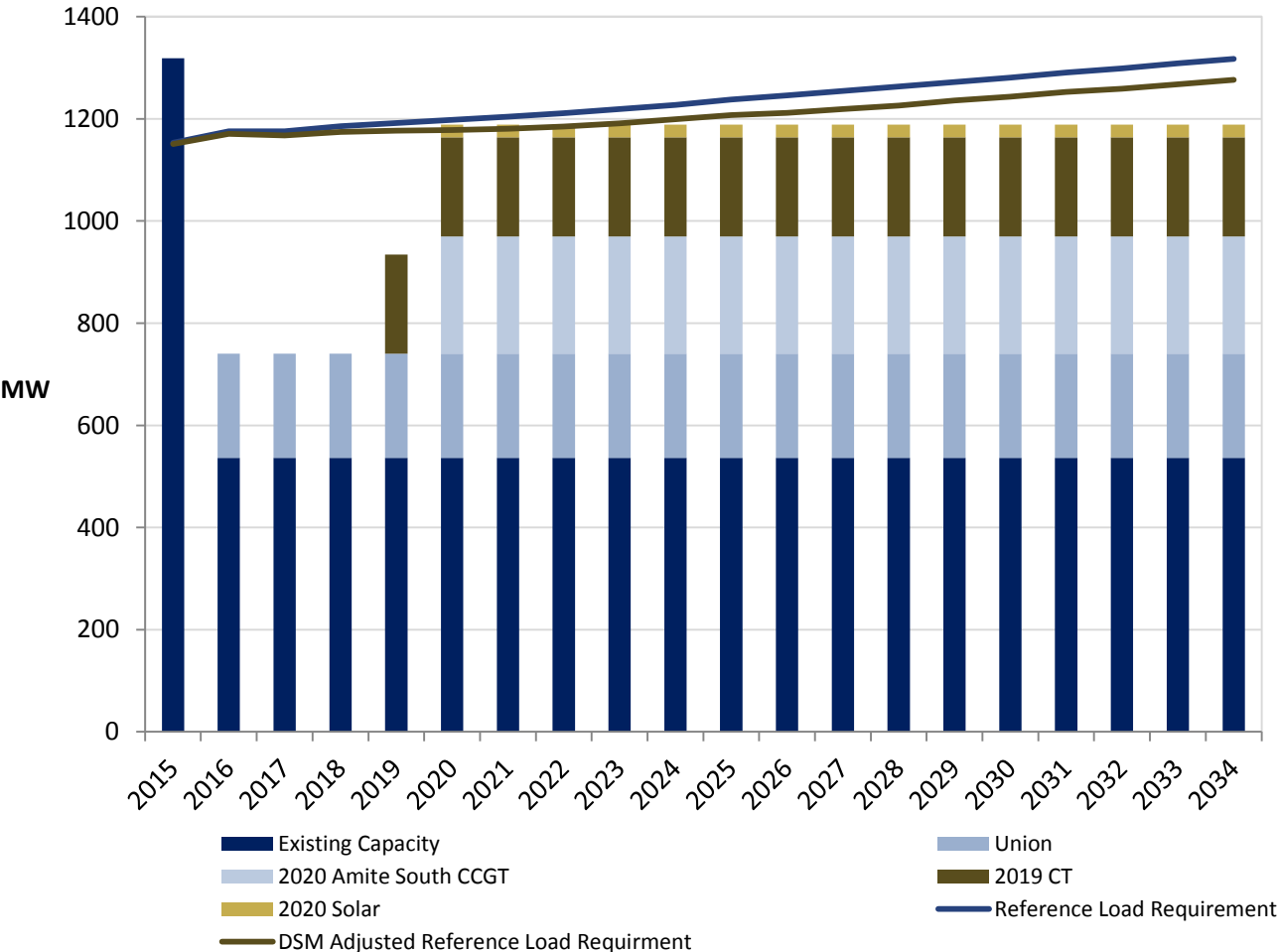


Resource Addition	Capacity (MW)
2019 CT	194

*Resources listed in blue are existing and planned resources. Resources additions listed in brown are the resources to be evaluated in the IRP.

MANUAL PORTFOLIOS - SUPPLY SIDE PORTFOLIOS

Industrial Renaissance – CT/Solar Portfolio

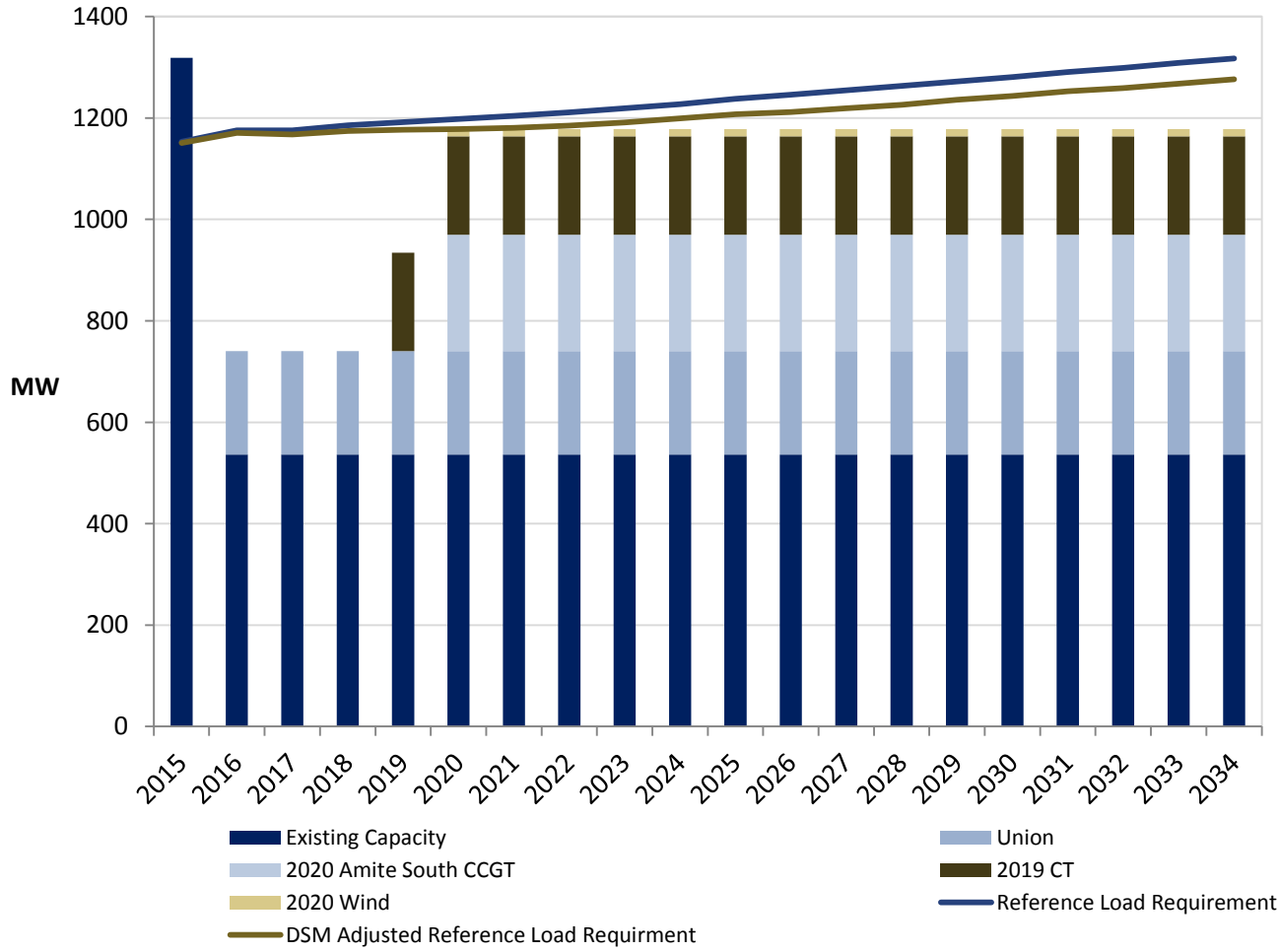


Resource Addition	Capacity (MW)	Effective Capacity (MW)
2019 CT	194	194
2020 Solar	100	25

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MANUAL PORTFOLIOS - SUPPLY SIDE PORTFOLIOS

Industrial Renaissance – CT/Wind Portfolio

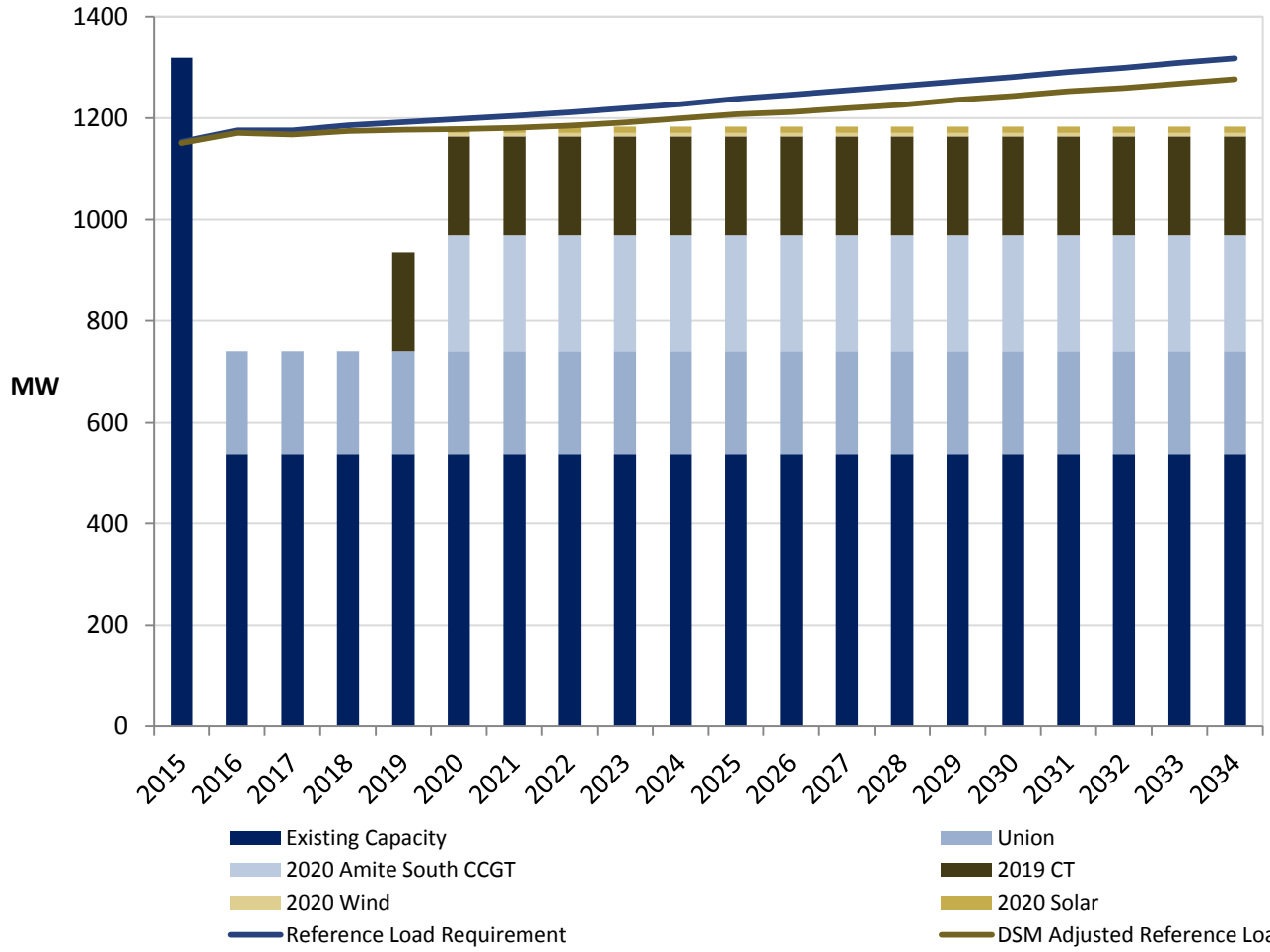


Resource Addition	Capacity (MW)	Effective Capacity (MW)
2019 CT	194	194
2020 Wind	100	14

*Resources listed in blue are existing and planned resources. Resources additions listed in brown are the resources to be evaluated in the IRP.

MANUAL PORTFOLIOS - SUPPLY SIDE PORTFOLIOS

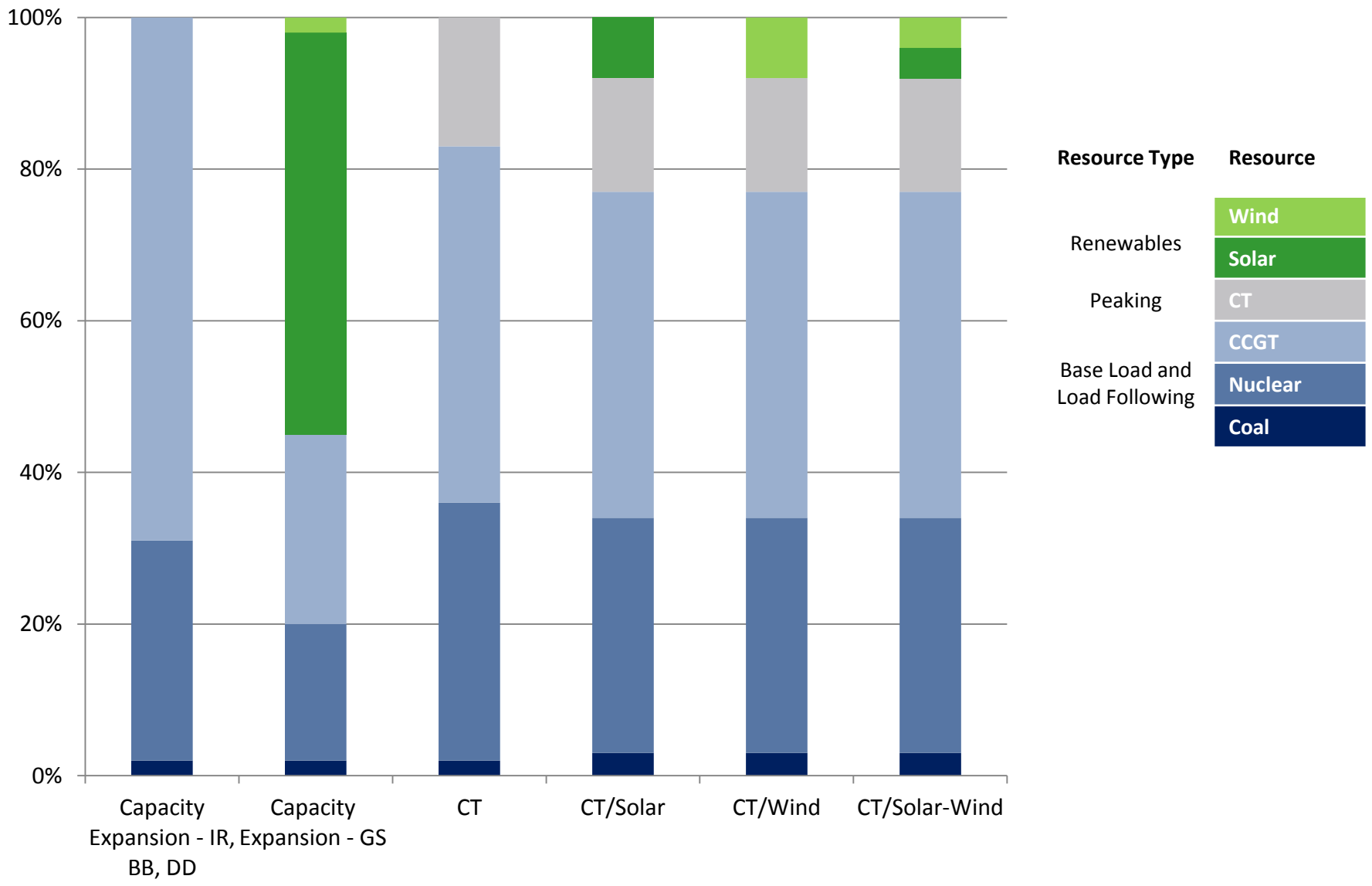
Industrial Renaissance – CT/Wind-Solar Portfolio



Resource Addition	Capacity (MW)	Effective Capacity (MW)
2019 CT	194	194
2020 Wind	50	7
2020 Solar	50	12.5

*Resources listed in blue are existing and planned resources. Resources additions listed in brown are the resources to be evaluated in the IRP.

INSTALLED CAPACITY MIX OF EACH PORTFOLIO IN 2034



PORTFOLIO ANALYSIS

Portfolio Ranking (Work in Progress)

	IR Scenario	BB Scenario	DD Scenario	GS Scenario
CT Portfolio				
CT/Solar Portfolio				
CT/Wind Portfolio				
CT/Wind-Solar Portfolio				
CCGT Portfolio				
Solar Portfolio				

- The variable cost results will be combined with the fixed costs of the incremental resource additions to yield the total forward revenue requirements excluding sunk costs of the portfolio.
- Evaluate portfolio performance based on ranking and range of outcomes.
- Assess portfolios based on their ability to balance planning objectives of reliability, cost, and risk.
- Develop portfolios for final reference plan based on performance and ability to meet planning objectives.

NEXT STEPS

The following activities are planned:

- Perform production cost simulations using Aurora for each of the portfolios
- Estimate total forward revenue requirements excluding sunk costs for each portfolio
- Assess sensitivity of key uncertainties
- Identify reference portfolio plan and action plan
- Draft IRP Report is due in June 2015