Proposed Resource Planning Portfolios from CPUC's Integrated Resource Planning Process for use in CAISO's 2021-2022 Transmission Planning Process

January 2021

California Public Utilities Commission

Introduction

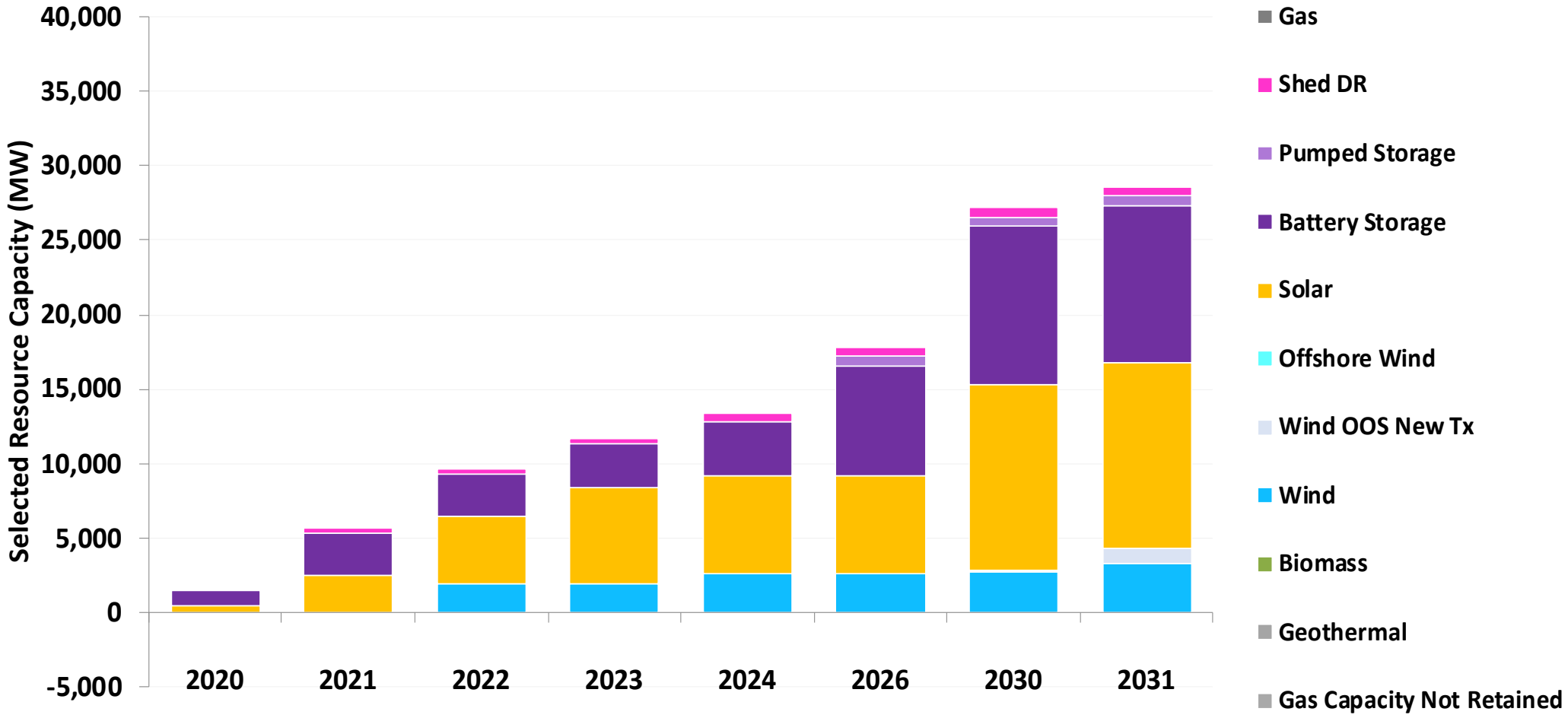
- This Slide Deck graphically shows the Proposed Resource Planning Portfolios, as released in a Draft Proposed Decision, January 8, 2021.
  - These portfolios have not yet been adopted by the CPUC.
- These resource planning portfolios are proposed to be used in the CAISO's 2021-2022 Transmission Planning Process.
  - Each portfolio will include 2031 as the final resource planning year to align with the TPP 10-year assessment horizon.
- These resource portfolios were developed using the same modeling assumptions as were used to develop the 2019 Reference System Plan (RSP) 46 MMT by 2030 portfolio adopted by D.20-03-028, with a few exceptions, including an updated load forecast using the 2019 IEPR.
  - Decision 20-03-028 is available here
  - See Section 4 of Report: Modeling Assumptions for the 2021-2022 Transmission Planning Process for further details on modeling assumptions
- Key Notes:
  - All figures and tables show MWs as Nameplate Megawatts (MW).
  - These figures and tables do not represent Net Qualifying Capacity MW, which adjusts the nameplate capacity amounts to account for its ability to meet resource adequacy requirements.
  - "Baseline resources" are existing resources and expected future resources included in a model run as an assumption rather than being selected by the model as part of an optimal solution.
  - New resources contracted since the RESOLVE baseline was set in January 2019 were identified from load-serving entity (LSE) plans filed on September 1, 2020, and to the extent possible, removed from the selected resources depicted in the following slides in accordance with the established busbar mapping process.
  - "Selected resources" are marginal resources added to the system during a modeling run (i.e., incremental to baseline resource).
  - Final busbar-mapped resource portfolios transmitted to the CAISO focus primarily on selected resources because that is the input the CAISO requires from the CPUC to assess transmission system implications and identify necessary transmission upgrades, notably, those that may be policy-driven.

46 MMT with 2019 IEPR

RESOLVE Selected Portfolio for the TPP Reliability and Policy-Driven Base Case

46 MMT with 2019 IEPR

RESOLVE Selected Portfolio for TPP Base Case

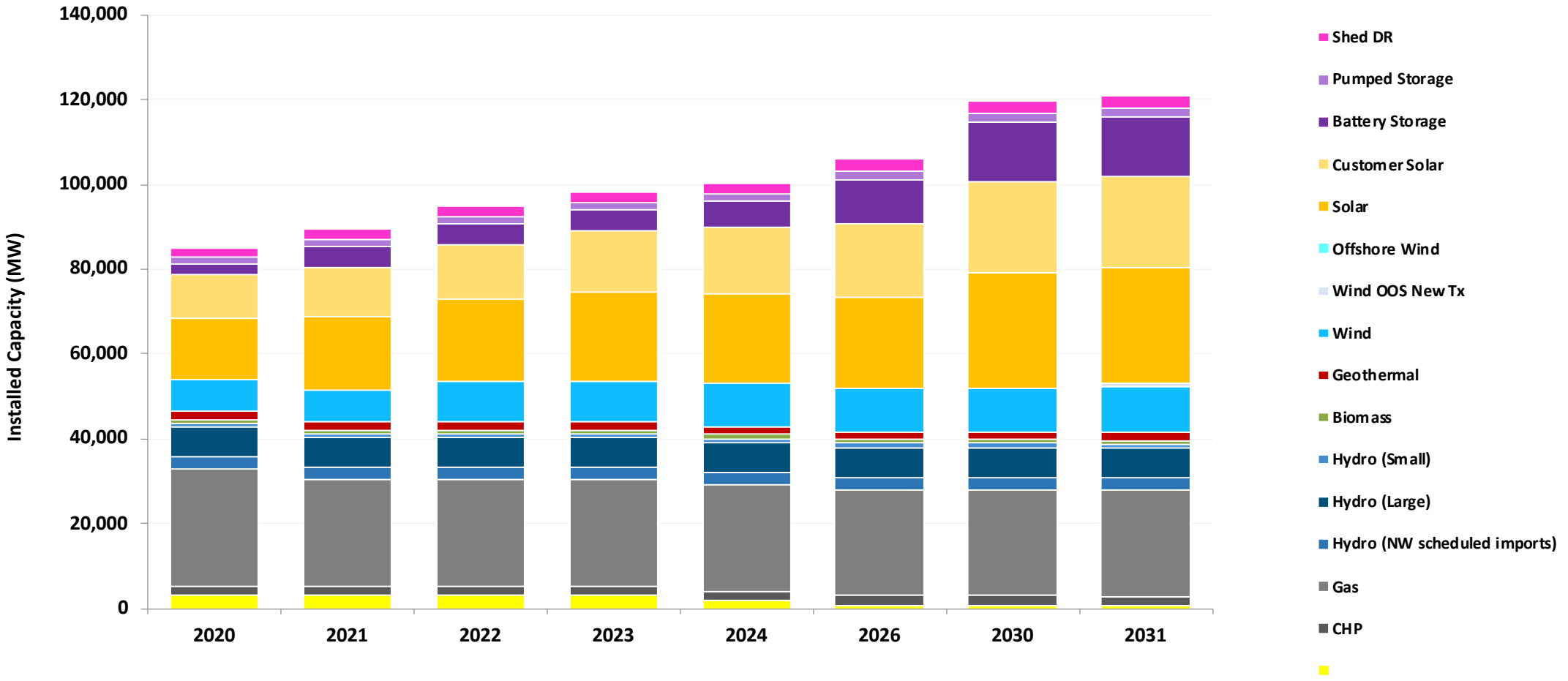


46 MMT with 2019 IEPR – Selected Resource Summary

	Unit	2020	2021	2022	2023	2024	2026	2030	2031
Gas	*MW*	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-
Geothermal	*MW*	-	-	-	-	-	-	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-
Wind	*MW*	-	-	1,916	1,916	2,647	2,647	2,703	3,267
Wind OOS New Tx	*MW*	-	-	-	-	-	-	198	1,062
Offshore Wind	*MW*	-	-	-	-	-	-	-	-
Solar	*MW*	510	2,510	4,510	6,510	6,510	6,510	12,394	12,394
Customer Solar	*MW*	-	-	-	-	-	-	-	-
Battery Storage	*MW*	1,026	2,886	2,886	2,886	3,617	7,427	10,635	10,635
Pumped Storage	*MW*	-	-	-	-	-	627	627	627
Shed DR	*MW*	-	343	343	343	608	608	608	608
Gas Capacity Not Retained	*MW*	-	-	-	-	-	-	-	-
In-State Renewables	*MW*	**510**	**2,510**	**6,426**	**8,426**	**9,157**	**9,157**	**15,097**	**15,661**
Out-Of-State Renewables	*MW*	**-**	**-**	**-**	**-**	**-**	**-**	**198**	**1,062**

46 MMT with 2019 IEPR – Total Build

Total Build includes baseline resources as well as selected resources.

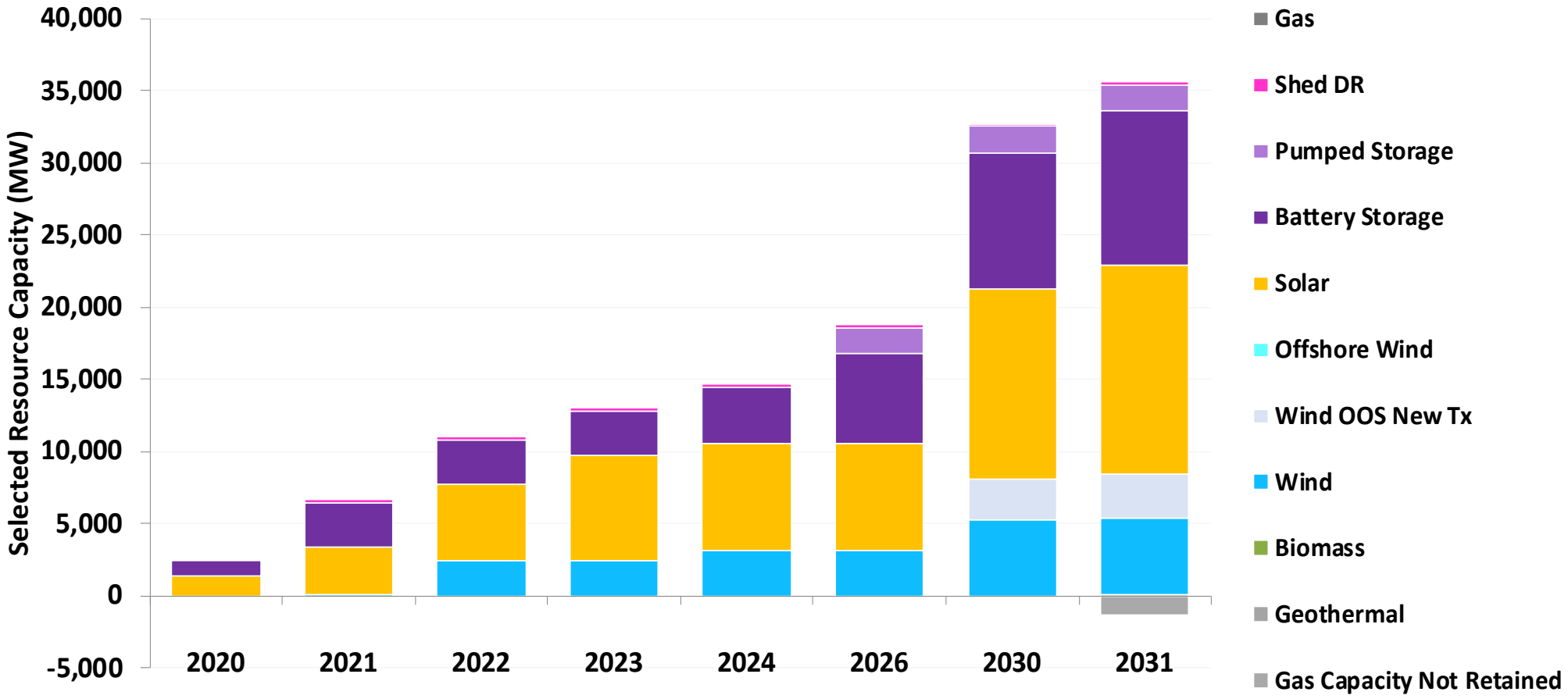


38 MMT with 2019 IEPR

RESOLVE Selected Portfolio for TPP Policy-Driven Assessments

38 MMT with 2019 IEPR

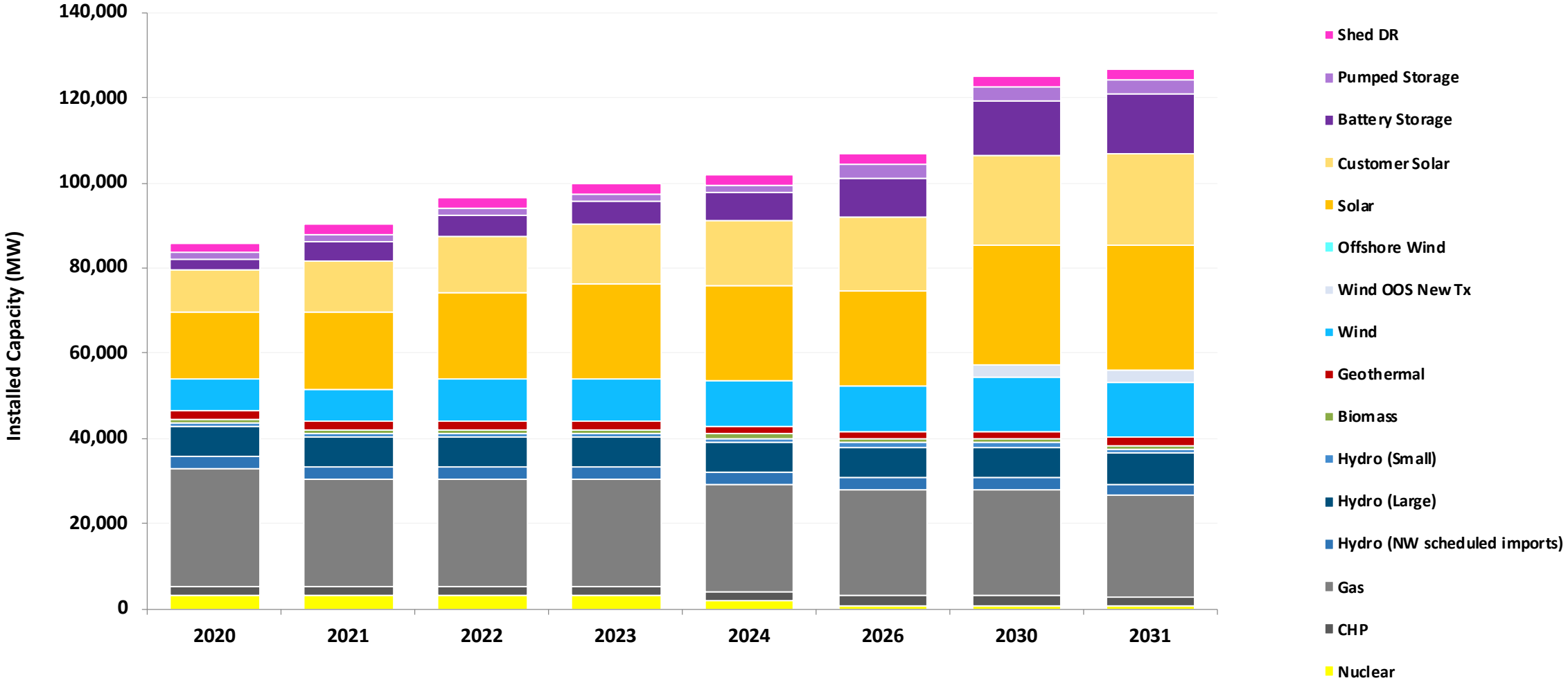
RESOLVE Selected Portfolio for TPP Policy-Driven Sensitivity



38 MMT with 2019 IEPR – Selected Resource Summary

	Unit	2020	2021	2022	2023	2024	2026	2030	2031
Gas	MW	-	-	-	-	-	-	-	-
Biomass	MW	-	-	-	-	-	-	-	-
Geothermal	MW	-	-	-	-	-	-	-	105
Hydro (Small)	MW	-	-	-	-	-	-	-	-
Wind	MW	-	34	2,392	2,392	3,179	3,179	5,279	5,279
Wind OOS New Tx	MW	-	-	-	-	-	-	2,800	3,000
Offshore Wind	MW	-	-	-	-	-	-	-	-
Solar	MW	1,389	3,389	5,389	7,389	7,389	7,389	13,167	14,544
Customer Solar	MW	-	-	-	-	-	-	-	-
Battery Storage	MW	1,005	2,988	2,988	2,988	3,895	6,188	9,420	10,663
Pumped Storage	MW	-	-	-	-	-	1,843	1,843	1,843
Shed DR	MW	-	222	222	222	222	222	222	222
Gas Capacity Not Retained	MW	-	-	-	-	-	-	-	(1,319)
In-State Renewables	MW	**1,389**	**3,423**	**7,781**	**9,781**	**10,568**	**10,568**	**18,446**	**19,928**
Out-Of-State Renewables	MW	**-**	**-**	**-**	**-**	**-**	**-**	**2,800**	**3,000**

38 MMT with 2019 IEPR – Total Build

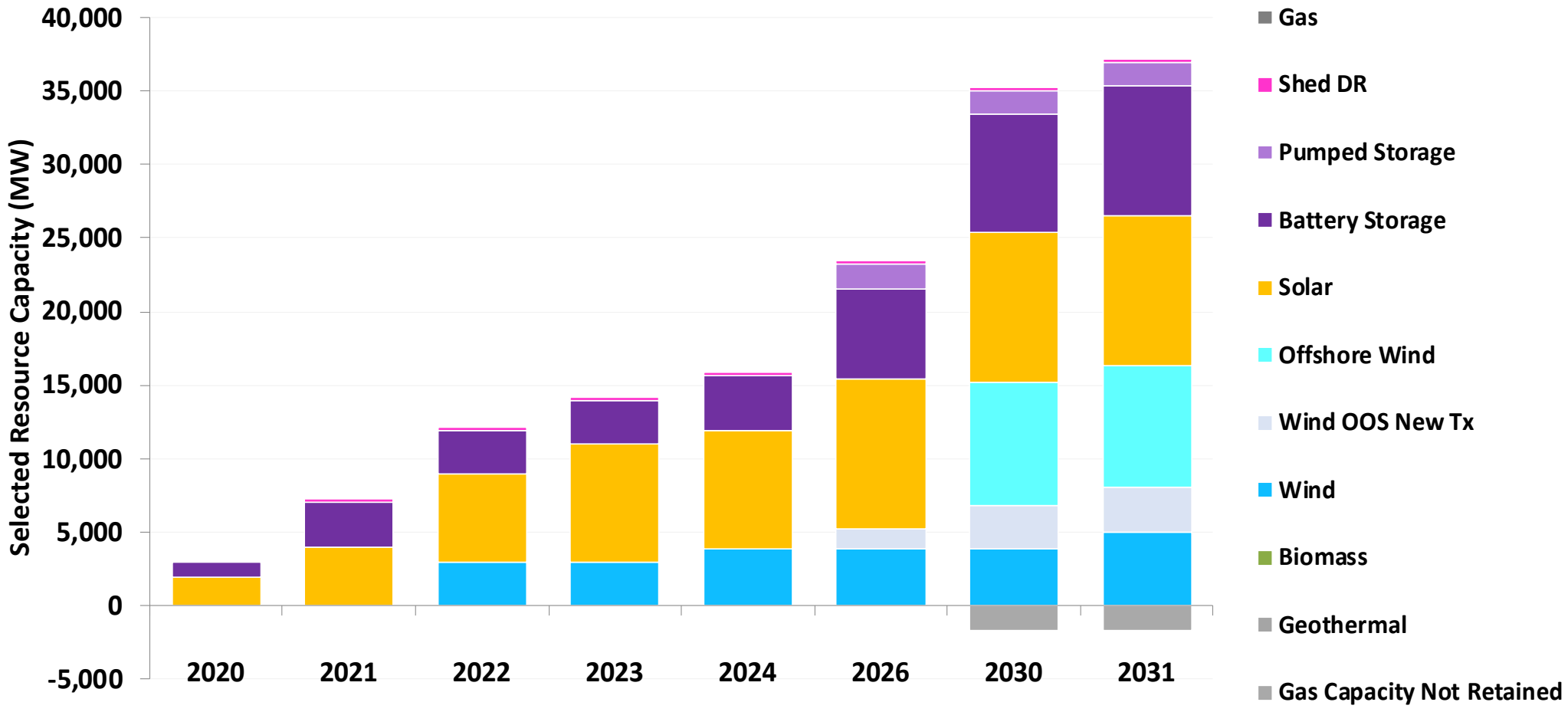


Offshore Wind Sensitivity

RESOLVE Selected Portfolio for TPP Policy-Driven Assessments

Offshore Wind Sensitivity

RESOLVE Selected Portfolio for TPP Policy-Driven Sensitivity



Offshore Wind Sensitivity – Selected Resource Summary

	Unit	2020	2021	2022	2023	2024	2026	2030	2031
Gas	*MW*	-	-	-	-	-	-	-	-
Biomass	*MW*	-	-	-	-	-	-	-	-
Geothermal	*MW*	-	-	-	-	-	-	-	-
Hydro (Small)	*MW*	-	-	-	-	-	-	-	-
Wind	*MW*	-	34	2,979	2,979	3,866	3,866	3,866	5,013
Wind OOS New Tx	*MW*	-	-	-	-	-	1,392	2,973	3,000
Offshore Wind	*MW*	-	-	-	-	-	-	8,351	8,351
Solar	*MW*	2,000	4,000	6,000	8,000	8,000	10,192	10,192	10,192
Customer Solar	*MW*	-	-	-	-	-	-	-	-
Battery Storage	*MW*	990	2,976	2,976	2,976	3,785	6,122	8,019	8,820
Pumped Storage	*MW*	-	-	-	-	-	1,613	1,613	1,613
Shed DR	*MW*	-	222	222	222	222	222	222	222
Gas Capacity Not Retained	*MW*	-	-	-	-	-	-	*(1,718)*	(1,718)
In-State Renewables	*MW*	**2,000**	**4,034**	**8,979**	**10,979**	**11,866**	**14,058**	**22,408**	**23,555**
Out-Of-State Renewables	*MW*	**-**	**-**	**-**	**-**	**-**	**1,392**	**2,973**	**3,000**

Offshore Wind Sensitivity – Total Build