



PCDS Meeting

September 27, 2023

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WECC

2032 ADS PCM V2.4.2

Summary of Changes

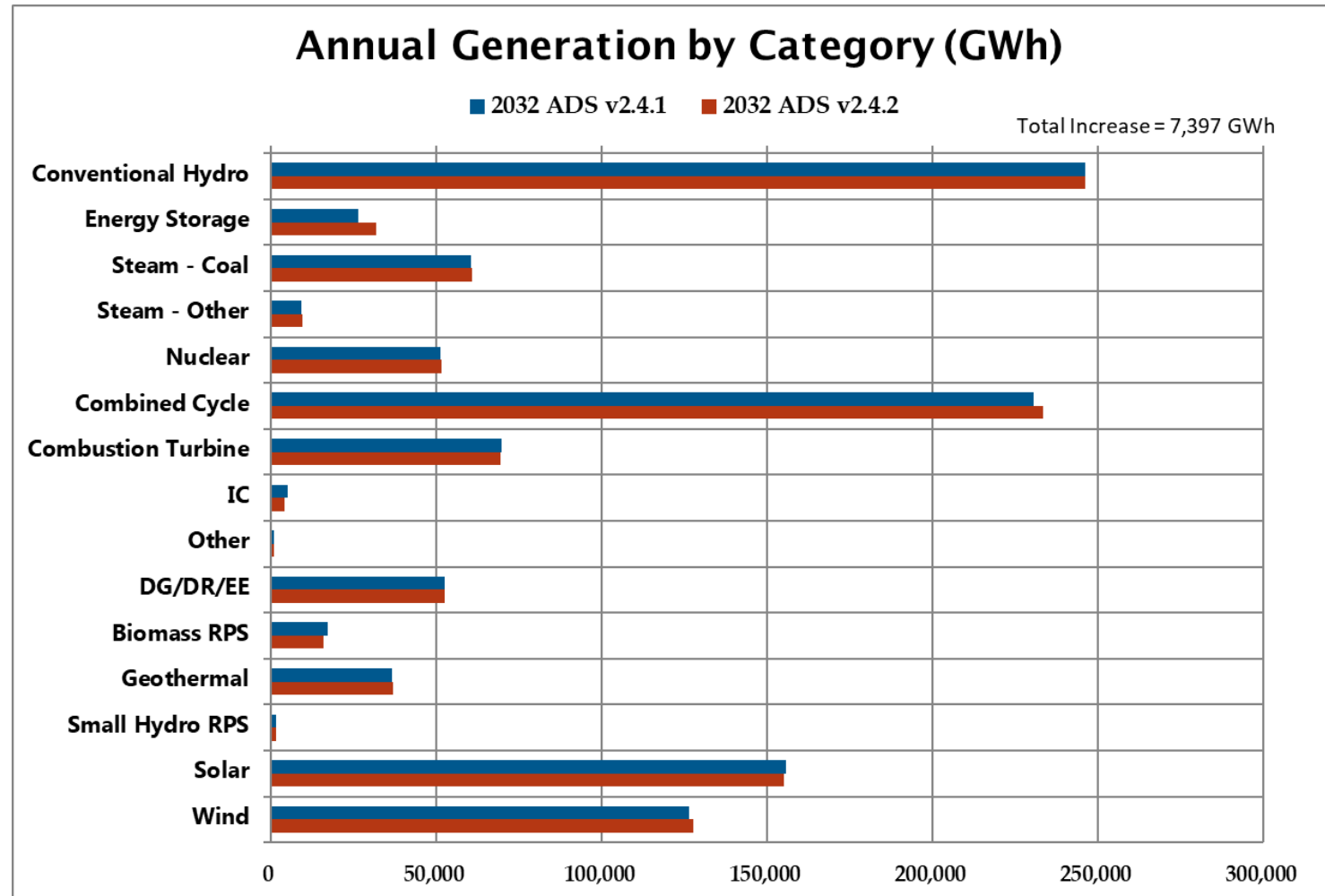
- Updates from V2.4.1 to 2.4.2, plus synched PF
 - Fixed duplicate Bus and IDs
 - Lake Hodges Pumped Storage—Verified unit was correctly modeled
 - SDG&E critical generation changes
 - Fixed Heat Rates
 - Fixed Natural Gas Assignments
 - Max Up time set to -1
 - Moved gens for congestion issues
 - Applicable changes made in synchronized PF

Summary of Changes

- Updated spaced in distribution table
- Hydro Monthly Variable Schedule
 - Must have “VARMarginRatio” entry for each generator
- Hydro Weekly Variable Schedule
 - Must have “VARMarginRatio” entry for each generator
 - Had to define in database first
- Pumped Storage—Plant Monthly Variable Schedule
 - “Storage Level” entry for each plant (already in case)

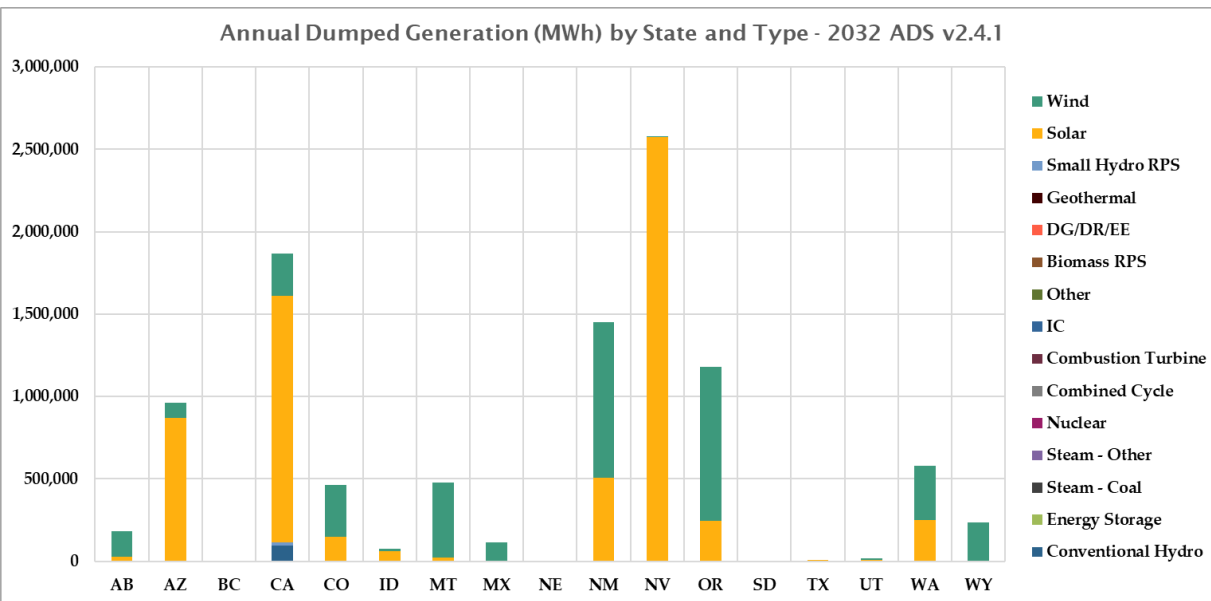
Annual Generation

0 Unserved load

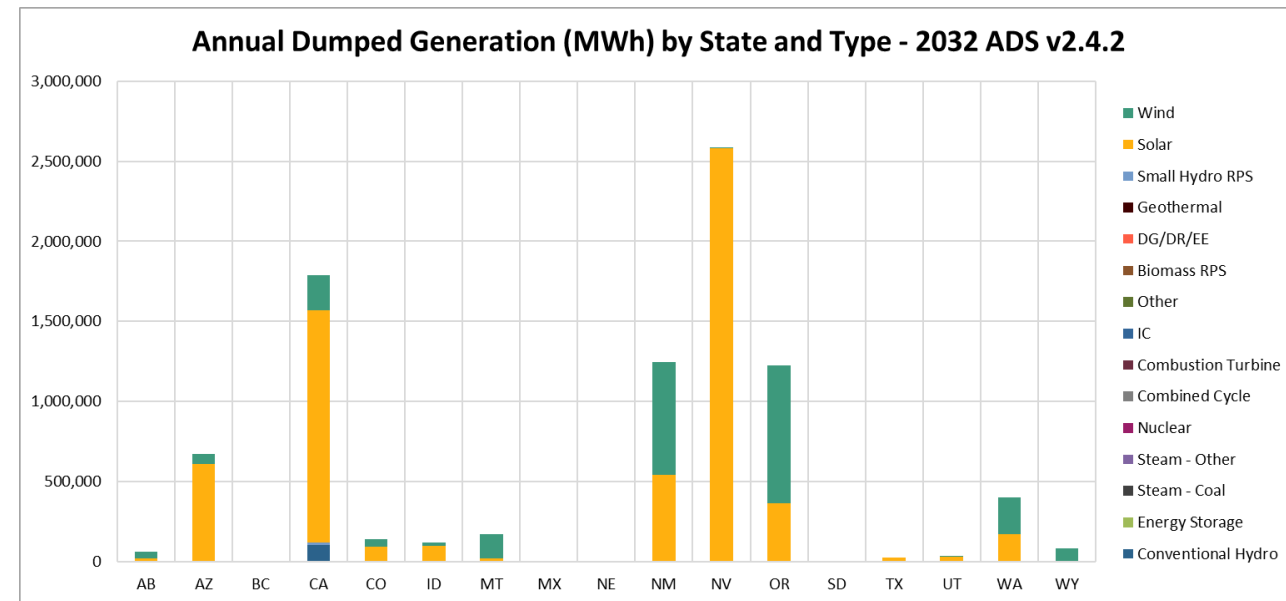


Dumped Energy

10,202,886 MWh Dumped Energy

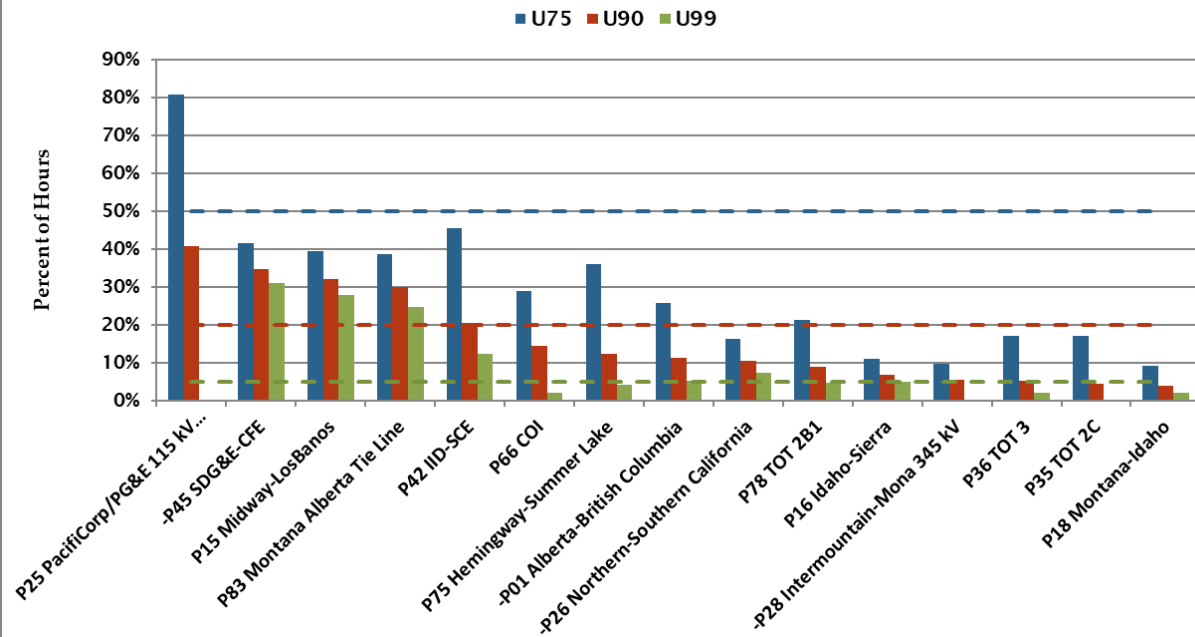


8,556,788 MWh Dumped Energy

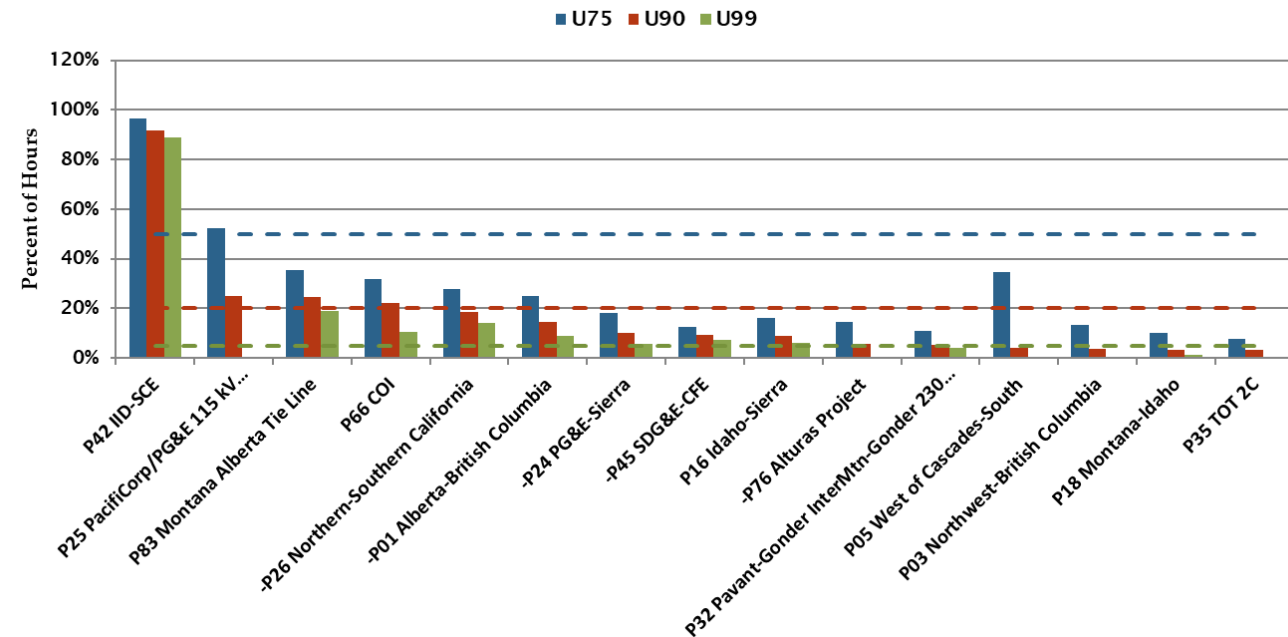


TX Utilization

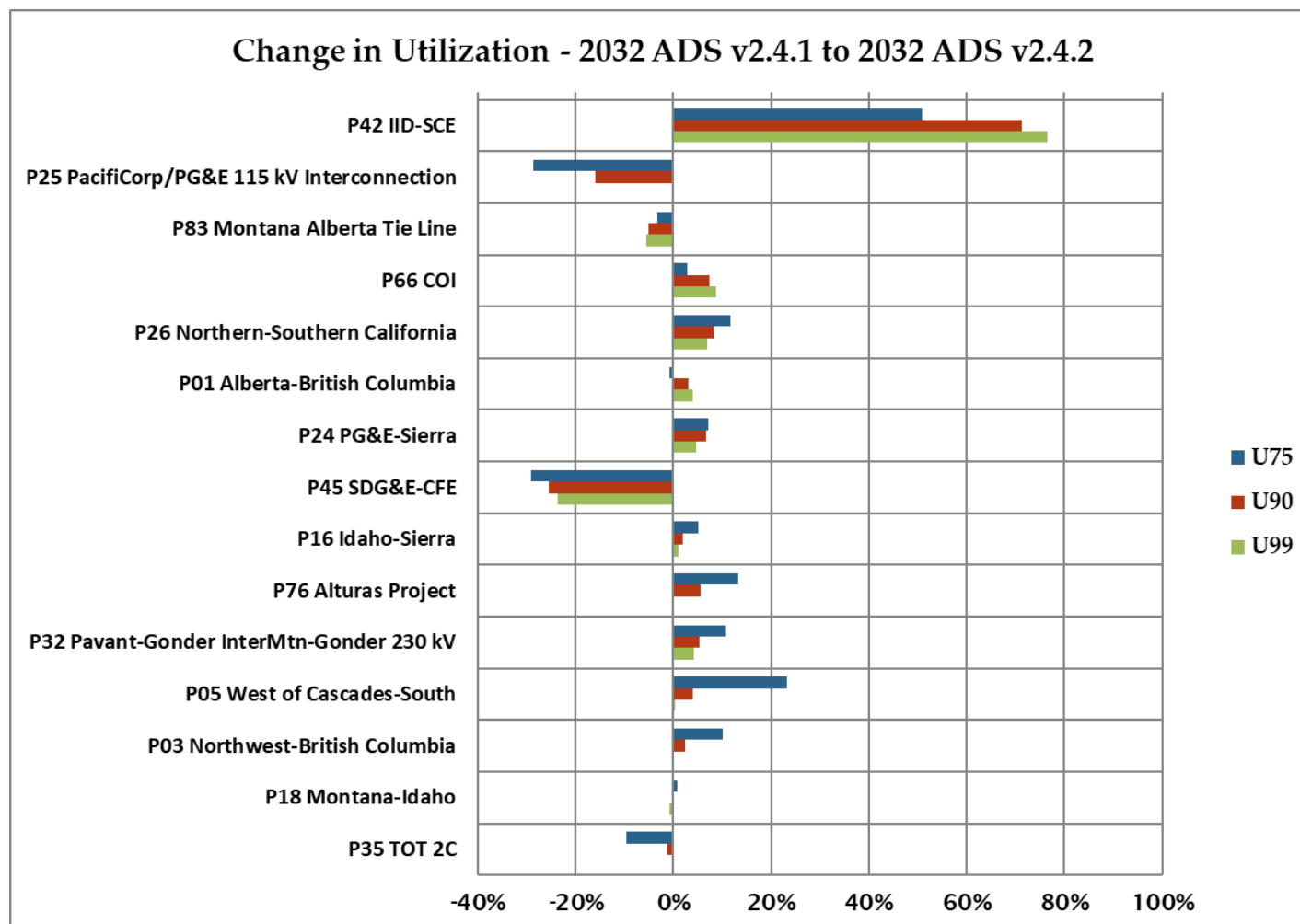
Most Heavily Utilized Paths - 2032 ADS v2.4.1



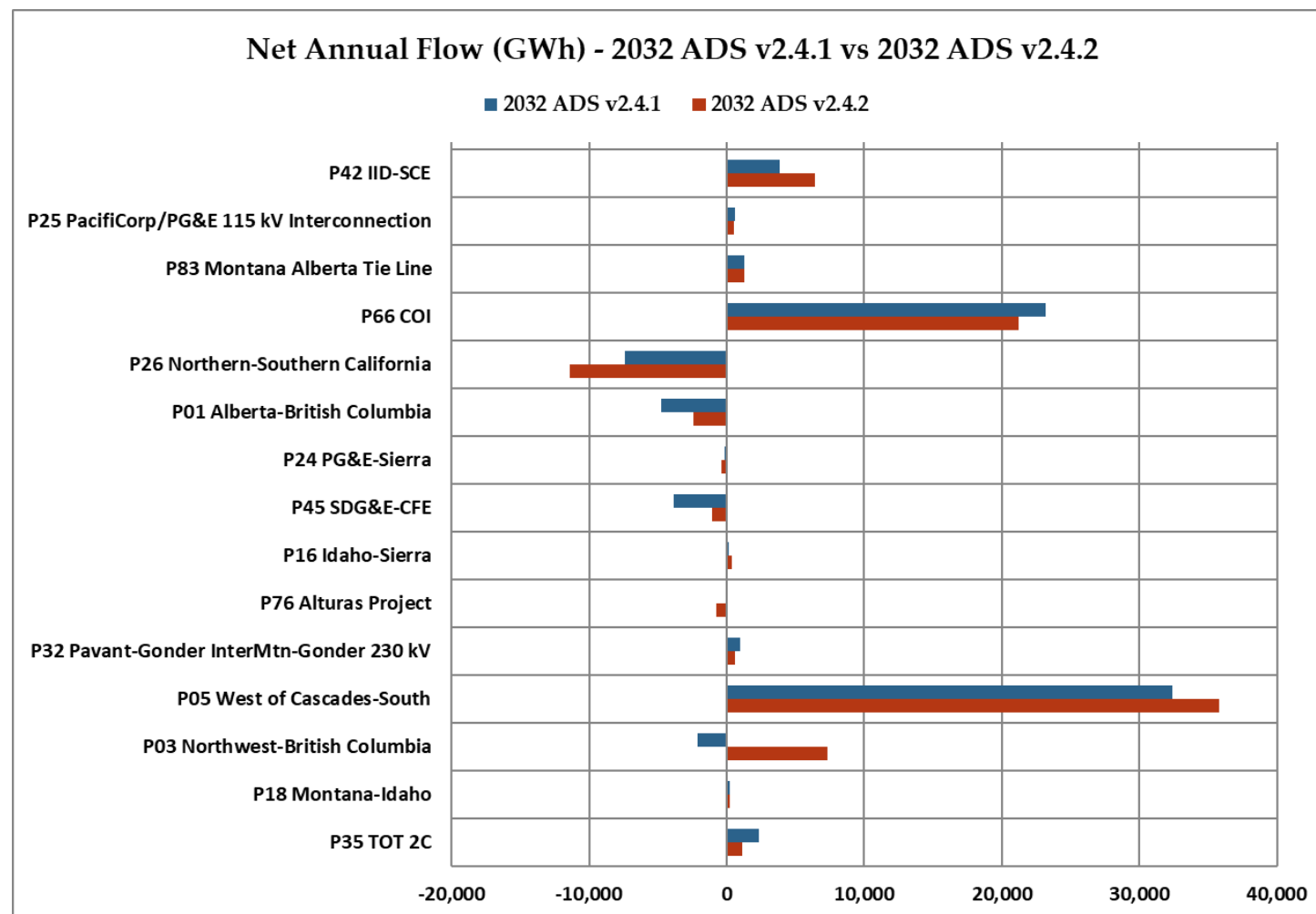
Most Heavily Utilized Paths - 2032 ADS v2.4.2



Change in Utilization



Net Annual Flow



2034 ADS Build—CEC EIA Data

CEC Hourly Data for 2034

Year

2034

	SDG&E		CAISO		PG&E		SCE	
	Max	Min	Max	Min	Max	Min	Max	Min
UNADJUSTED_CONSUMPTION	5864	1989	58827	19164	27255	8826	28953	7940
PUMPING	0	0	1685	450	689	130	1011	311
CLIMATE_CHANGE	44	-32	429	-249	218	-82	180	-137
LIGHT_EV	807	81	5457	587	2605	279	2098	225
MEDIUM_HEAVY_EV	137	10	1209	178	606	88	465	69
TOU_IMPACTS	0	0	123	-309	99	-204	65	-119
OTHER_ADJUSTMENTS	0	0	392	378	392	378	0	0
BASELINE_CONSUMPTION	6266	2225	63250	22711	29077	10604	30834	9366
BTM_PV	0	-2923	0	-23649	0	-13218	0	-7942
BTM_STORAGE_RES	184	-164	1142	-1101	820	-666	266	-298
BTM_STORAGE_NONRES	36	-20	316	-163	154	-75	126	-68
AAEE	-74	-438	-845	-3518	-385	-1544	-372	-1786
AAFS	102	8	1856	166	1054	88	721	70
AATE_LDV	433	46	3095	335	1492	160	1249	128
AATE_MDHD	81	8	845	212	429	104	334	85
BASELINE_NET_LOAD	5181	323	54553	8060	24323	2044	26105	4959
MANAGED_NET_LOAD	5028	412	54343	8809	24264	2486	25776	5197

EIA_861 BTM Growth 2021 to 2034

- Average % load growth per year from for seven years, from 2026–2033 (L&R Data Energy Code1)
- Grew the 2021 BTM Storage from 2021 to 2033 at the same % per year

EIA_861 2021 Data—Non Net Metered

	Non Net Metered	Non Net Metered
	2021	2034
AREA	Storage	Storage
AVA	-	-
AZPS	-	-
BANC	0.327	0.41
BPAT	-	-
CHPD	-	-
CISO	180.685	226.89
DOPD	-	-
EPE	-	-
GCPD	-	-
IID	-	-
IPCO	-	-
LDWP	0.526	0.60
NEVP	-	-
NWMT	-	-
PACE	0.250	0.27
PACW	-	-
PGE	1.642	2.04
PNM	-	-
PSCO	-	-
PSEI	-	-
SCL	-	-
SRP	-	-
TEPC	-	-
TIDC	-	-
TPWR	-	-
WACM	0.622	0.82
WALC	-	-
WAUW	-	-

EIA_861 2021 Data—Net Metered

	Net Metered	Net Metered
	2021	2034
AREA	Storage	Storage
AVA	-	-
AZPS	-	-
BANC	4.632	5.83
BPAT	1.077	1.46
CHPD	-	-
CISO	570.811	716.78
DOPD	-	-
EPE	0.979	1.17
GCPD	0.011	0.01
IID	-	-
IPCO	-	-
LDWP	18.380	20.89
NEVP	8.845	9.65
NWMT	0.396	0.42
PACE	17.136	18.19
PACW	1.924	2.12
PGE	-	-
PNM	-	-
PSCO	1.760	2.25
PSEI	-	-
SCL	-	-
SRP	10.399	14.76
TEPC	3.594	4.49
TIDC	-	-
TPWR	-	-
WACM	-	-
WALC	-	-
WAUW	-	-

Sums of Codes used for Peak and Energy

- **Peak**, Sum of the following codes used:
 - Code 1-Firm Demand
 - Code 2-I—Interruptible Demand
 - Code 2-L—Load Management
 - Code 2-P—Critical peak pricing with control
 - Code 2-R—Load as a capacity resource
 - Code 19—Rooftop solar expected installed capacity
- **Energy**, Sum of the following codes used:
 - Code 1—Firm Energy
 - Code 2—Non-Firm Energy
 - BTM Energy (Code 18 from Peak multiplied by hourly shape from NREL to get BTM Energy)

Peak Demand				
Code	Category	Description	Used in Load Forecast	Notes
1	Firm demand	Firm demand, excluding station use	Yes	
2-I	DSM—Expected available	Interruptible demand	Yes	
2-L	DSM—Expected available	Load management	Yes	
2-P	DSM—Expected available	Critical peak pricing with control	Yes	
2-R	DSM—Expected available	Load as a capacity resource	Yes	
3-IT	DSM—Total enrolled	Interruptible demand	No	
3-LT	DSM—Total enrolled	Load management	No	
3-PT	DSM—Total enrolled	Critical peak pricing with control	No	
3-RT	DSM—Total enrolled	Load as a capacity resource	No	
14	Unavailable capacity	Scheduled maintenance	No	
15	Unavailable capacity	Inoperable capacity	No	
16	Unavailable capacity	Forced outages, Actual Year only	No	
18	Rooftop solar	Expected installed capacity	Yes (not double counted, used on Energy side)	Installed BTM PV
19	Rooftop solar	Expected demand served by rooftop solar	Yes	BTM PV Contribution to peak
70	Conservation/Energy Efficiency	Conservation and Energy Efficiency	No	
73	Standby Demand	Standby demand under contract	No	

Energy		
Code	Description	Loads used
1	Firm energy	Yes
2	Non-firm energy	Yes
BTM Energy	BTM Energy	Code 18 used here: BTM Energy (GWh) = BTM Capacity (code 18) x Katys BTM shape from NREL BTM Hourly Shapes are created on the generator side from the NREL Data BTM is added to load, then we create shapes and add them to the generation side Yes

Other 2034 ADS Build Items

Thermal Plant Data

- Reached out to Intertek regarding the thermal plant data, start costs, min up/down time, ramp rates, etc.
- Intertek Response—We periodically update this data. The 2020 data was based on a projected 2030 operation. A two-year change is unlikely to change much on plant operating costs but, if you give me some details, we can review.

Current Items

- 9-13-2023:
 - V1_Thermal Plant Data
 - V1_ Cycling Data (Start costs, other)
 - V1_ Min up/down time
 - V1_ Ramp Rates
 - V1_ VOM
- 9-27-2023
 - V1_ Heat rates

Outstanding Items

- V1_Transmission Contingencies
- V1_Phase Shifter Transformers—Reviewing in 2032 ADS V2.4.2
- V1_ BTM PV V1_ BTM Storage, V1_ Energy Efficiency V1_ Electric Vehicle loads, V1_ Electrification Loads
- V1_Hourly Utility Scale Solar shapes—Reviewing in 2032 ADS V2.4.2
- V1_Hourly Wind Shapes—Reviewing in 2032 ADS V2.4.2



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