



PCDS

October 11, 2023

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WECC

# PCDS Engagement Survey Takeaways

- What is your purpose for attending the PCDS meetings?
  - *Information, help build/validate ADS PCM, represent company and members*
- Do you use the ADS PCM? If so, how?
  - *Consulting and client-based work, planning work, day-to-day planning, validate projects and perform production cost and congestion studies, economic assessments, a starting point for studies.*
- Which is more important for you and your organization, to have the ADS PCM released by a specific time, or to have the latest data included?
  - *Both, but on-time takes a small lead. Accuracy surpasses everything. Both, but there is some flexibility on latest data. Hate to see dataset being held of up waiting for latest data. Make sure new data is well vetted data, nice to have regularity to when the data set is released.*

**Suggestion: WECC could make the latest data available to users if they wanted to implement updates as it becomes available.**

# PCDS Engagement Survey Takeaways

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- What data inputs are most important for you in the ADS PCM?
  - *All inputs, Loads and Resources, vetted inputs are crucial*
- How could the ADS PCM serve you or your organization better/What improvements could the PCDS make?
  - *Multiple years of ADS PCM, example 3-year, 5-year, and 10-year.*
  - *If the modeling requirements for new features were published openly and not just shared with a single PCM vendor.*
  - *Continue working and listening to stakeholders needs, providing consistent assumptions in a timely manner, keep updating data, continual improvement which the PCDS and WECC are doing.*
  - *More in depth DDVM or Release Notes*
  - *Make available all change files used to create the ADS build from scratch.*

# PCDS Engagement Survey Takeaways

- Do you consider the ADS PCM to be a credible dataset? Why or why not?
  - *Yes, yes, yes,... 100% because of its open/public development process with the assumptions/inputs and subject matter expertise from stakeholders.*
- What does the PCDS do well?
  - *Delivers ADS PCM with associated inputs, opportunity to identify system level risk. Working with stakeholders and consulting with others such as national labs for data, working with software vendor for modeling enhancements.*
- Are there other work products that you would like to see PCDS produce?
  - *Improved summary output, standard set of metrics to be generated as outputs. Ex. WECC interfaces, Path Flow and Congestion. Regional Gen output by Fuel Type. Overall production cost by region. This will also help show the behavior of the PCM to the Power Flow folks.*
  - *Longer term ADS PCM case (15~20 years), with further discussion on potential for scenarios.*
- Please provide any other feedback and comments you have about the PCDS and the ADS.
  - *The WECC staff and the PCDS members should be commended for their effort at building the ADS PCM cases.*
  - *Much praise to the PCDS for all of the work that it does*
  - *Consideration of Electrification, changing fleet in the transportation sector, impact of different weather scenarios would help planning studies even more.*
  - *Keep up the good work!*

# 2023 Demand Codes

## 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	Yes

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

# 2022 Submission Supplemental Codes

Load Codes - Monthly for Year 10				
Code	Description	Remarks		Total
1001	Gross load with transmission loss (Peak)	Gross load = BA load reduced only for Energy Efficiency (EE) Savings and includes losses in the distribution system. If Gross Load <u>with</u> Transmission Loss is entered, also enter the associated Transmission Loss (Code 1005).		21
1002	Or submit Gross load <u>without</u> transmission loss (Peak)	If Gross Load <u>without</u> Transmission Loss is entered, then it is not necessary to enter the associated Transmission Loss.		8
1003	Net load with transmission loss (Peak)	Net load = Gross load - Incremental committed EE - AAEE – DG_BTM – DR – EV - Storage - Pumping load (if included in L&R). If Net Load <u>with</u> Transmission Loss is entered, also enter the associated Transmission Loss (Code 1005)		13
1004	Or submit Net load <u>without</u> transmission loss (Peak)	If Net Load <u>without</u> Transmission Loss is entered, then it is not necessary to enter the associated Transmission Loss.		10
1005	Transmission losses (Peak)			19
1010	Transmission losses (Energy)			19
1006	Gross load with transmission loss (Energy)	Gross load = BA load reduced only for Energy Efficiency (EE) Savings and includes losses in the distribution system. If Gross Load <u>with</u> Transmission Loss is entered, also enter the associated Transmission Loss (Code 1010)		19
1007	Or submit Gross load without transmission loss (Energy)	If Gross Load <u>without</u> Transmission Loss is entered, then it is not necessary to enter the associated Transmission Loss		9
1008	Net load with transmission loss (Energy)	Net load = Gross load - Incremental committed EE - AAEE – DG_BTM – DR – EV - Storage - Pumping load (if included in L&R). If Net Load <u>with</u> Transmission Loss is entered, also enter the associated Transmission Loss (Code 1010).		12
1009	Or submit Net load without transmission loss (Energy)	If Net Load <u>without</u> Transmission Loss is entered, then it is not necessary to enter the associated Transmission Loss.		10
1052	DG_BTM - Monthly maximum	Net metering tariffs might help provide a partial picture of the monthly BTM DG		12
1053	DG_BTM - Monthly energy			10
1061	Committed Incremental EE - Projected capacity	Committed Incremental EE = projected committed EE that are not already included in the Gross Load - in case the Gross Load only include EE for the base year, and not the projected EE.		6
1062	Committed Incremental EE - Monthly maximum			5
1063	Committed Incremental EE - Monthly energy			10



1064	Committed Incremental EE - Monthly peak impact	The EE value in the PF case for the Peak conditions should be one of the monthly peak impact values	10
1071	AAEE - Projected capacity	AAEE = Additional Achievable Energy Efficiency Savings, new entry to reflect uncommitted EE beyond what is already included in Gross load.	2
1072	AAEE - Monthly maximum		3
1073	AAEE - Monthly energy		4
1074	AAEE - Monthly peak impact	The AAEE value in the PF case for the Peak conditions should be one of the monthly peak impact values	4
1081	DR_Control - Projected capacity under the control of the BAA	DR_BA = Demand Response (DR) under the control of the BAA = customer reduction in electricity usage, such that the customer's normal consumption pattern is reduced in response to price changes or incentive payments designed to lower electricity use at times of system stress or high market prices. (DDVM, P.13 and P.24 and P.33).	6
1082	DR_Control - Monthly maximum		5
1083	DR_Control - Monthly energy		2
1084	DR_Control - Monthly peak impact	The amount of DR, if used in the PF case for the Peak conditions, should be one of the monthly peak impact values	4
1091	DR - Projected capacity NOT under the control of the BAA	DR = Demand Response (DR) NOT under the control of the BAA = customer reduction in electricity usage, such that the customer's normal consumption pattern is reduced in response to price changes or incentive payments designed to lower electricity use at times of system stress or high market prices. (DDVM, P.13 and P.24 and P.33)	1
1092	DR - Monthly maximum		1
1093	DR - Monthly energy		4
1094	DR - Monthly peak impact	The amount of DR not under the control of the BAA, if used in the PF case for the Peak conditions, should be one of the monthly peak impact values	6
1101	EV - Projected capacity	EV = Electric Vehicle charging, new entry because EV charging can have different characteristic than customer load.	3
1102	EV - Monthly maximum		8
1103	EV - Monthly energy		13
1104	EV - Monthly peak impact	The EV load in the PF case for the Peak conditions should be one of the monthly peak impact values	10

1111	Storage_BTM - Installed Capacity (Discharging = positive value)	BTM Storage, e.g. battery (DDVM P.13, P.19)	1
1112	Storage_BTM - Installed Capacity (Charging = negative value)		0
1113	Storage_BTM - Monthly maximum (Charging or Discharging)		2
1114	Storage_BTM - Monthly Energy (Discharging)		1
1115	Storage_BTM - Monthly Energy (Charging)		0
1116	Storage_BTM - Monthly peak impact	The BTM Storage in the PF case for the Peak conditions should be one of the monthly peak impact values	4
1121	BTM_Pumping Load - Installed Capacity	BTM Pumping Load = pumping load for water delivery (e.g., State pumps) to the extent it is included in the load - new entry because some pumping loads are combined with customer loads	0
1122	BTM_Pumping load - Monthly maximum		0
1123	BTM_Pumping load - Monthly Energy		0
1124	BTM_Pumping load - Monthly peak impact	BTM Pumping Load in the PF case for the Peak conditions should be one of the monthly peak impact values	0
1131	Transmission-Connected Non-Pumped Storage Pumping load - Installed capacity	Pumping load (e.g., for water delivery) = remove from the Gross load if they are included by individual BAs in their L&R data submittal (DDVM, P.18 and P.23). Pumping Loads are typically modeled as non-conforming Load at the PF Bus	0
1132	Transmission-Connected Non-Pumped Storage Pumping load - Monthly maximum		0
1133	Transmission-Connected Non-Pumped Storage Pumping load - Monthly Energy		1
1134	Transmission-Connected Non-Pumped Storage Pumping load - Monthly peak impact	The Transmission Connected Pumping Load in the PF case for the Peak conditions should be one of the monthly peak impact values	1

# Other 2034 ADS Build Items

# 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

# Approval Item

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- Model CEC BTM Storage as a data source for SDG&E, PG&E, SCE



# Thermal Plant Data

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- 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 going to change much on plant operating costs.”

# Approval Item

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- Modeling of cycling data from the 2020 Intertek report and ask Intertek for updates for V2 of ADS



# Forced Outage Rates

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- GADS pc-GAR



# Outstanding Items

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- 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

# Next meeting

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- Wind Solar Capacity Factors analysis
- Heat Rates
- FOR
- Path Ratings
- Phase Shifter analysis



Electric Reliability and Security for the West

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