from Sky Stanfield to Everyone: 12:07 PM

What do the section numbers refer to (B.1, etc)? In the resolution or..?

from Aliaga-Caro, Jose to Everyone: 12:12 PM

Sky: They refer to the sections in Resolution E-5230. There's a key in the ED slides for that

from Sky Stanfield to Everyone: 12:14 PM

thanks

from Roni Mejia - SCE to Everyone: 12:15 PM

Amin, you refer to "feeder" profile but our understanding is that ICA is performed at the 3-phase node level, can you clarify?

from Alex Mwaura to Everyone: 12:22 PM

What we also asked was how do rate payers benefit?

from Tam Hunt GPI to Everyone: 12:22 PM

From GPI's perspective, ratepayers will benefit from higher DERs at no extra distribution cost, and that could be quite a substantial benefit.

from Frances Cleveland to Everyone: 12:25 PM

What are the utility costs related not only to implementation but from possible equipment damage and for improving safety if 288 values are used?

from Aliaga-Caro, Jose to Everyone: 12:25 PM

I will circulate CalAdvocate's updated slides at the end of the day and post those to the web site

from Stephan Barsun to Everyone: 12:26 PM

SCE is updating their ICA maps on a rolling basis so pls make sure you only use segments that have been updated...

from Sahm White to Everyone: 12:32 PM

These results are very encouraging. Can you confirm whether the "current limit" you used reflected the PV profile (10am-4pm min) used for interconnection? If not, that would be appropriate to add as an analysis

from Younes, Amin to Everyone: 12:35 PM

Good question Sahm, it did not include the PV profile (I said so at SIWG but forgot to reiterate that here!). That would impact the energy comparison but, likely, not the power comparison (since PV would not generate much during 4-9pm). Accounting for PV profile would be a bit challenging but may be feasible.

from Sahm White to Everyone: 12:39 PM

Couldn't the autonous safety functions of smart inverters mitigate the risk of excess export if the line profile doesn't match reality at any time?

from gary holdsworth sdg&e to Everyone: 12:40 PM

I've been waiting patiently to add a point on "benefits".

from Michael Barigian SCE to Everyone: 12:42 PM

@Sahm, No. The smart inverters would only be aware of the voltage and current at their location, while criteria violations could be caused on upstream or downstream equipment and/or lines.

from Frances Cleveland to Everyone: 12:43 PM

Situational awareness, including metered data (!) could be used to transmit more "real-time" data whenever a safety issue arises

from Yi Li SDG&E to Everyone: 12:44 PM

@Sahm: to my knowledge, SI has the ability to monitor the output of the generation, not the export.

from Frances Cleveland to Everyone: 12:46 PM

In the SIOWG we are focusing on situational awareness at the PCC. This may require a longer time frame, but I still contend that AMI data could be used for some data right away.

from Michael Barigian SCE to Everyone: 12:50 PM

@Frances: SCE's AMI system takes reads at 15-60 minute intervals. The data is stored and then uploaded to back-end systems in batches during the evening. So even though reads are taken as fast as every 15 minutes, our systems don't recieve the data more than once a day. SCE's AMI system is meant for billing, and is currently far from a real-time operational tool.

from Sahm White to Everyone: 12:51 PM

Re: Ratepayer Benefits. There are two primary avoided costs: 1. Substantial reduced T&D capacity upgrades required to serve load; 2. Marginally reduced generation costs where gen facility output can be optimized

from Brian Lydic - IREC to Everyone: 12:52 PM

@Michael - I think we should go back to this discussion during the IOU preso. Is real time necessaray to catch whether short-term violations have occured and take action? Maybe not

from Younes, Amin to Everyone: 12:55 PM

@Sahm I think that the gen cost reduction is more than marginal. It's certainly possible to see distributed storage displacing peaker plant dispatch which could have a significant impact on market clearing price.

from Saeed Jazebi to Everyone: 12:58 PM

@Sahm, often time the overvoltage/undervoltage or thermal constraint do not happen at the point of interconnection, where Smart Inverters are not able to mitigate the risk to damage equipment.

from Regnier, Justin to Everyone: 12:58 PM

@Michael - aren't thermal violations generally accompanied by voltage rise that would show up at the PCC?

from Sahm White to Everyone: 12:59 PM

Note that we have identified the need for circuit protection systems to accomodate two way power flow for at least 15 years - we've had DERs for decades. The concerns and solutions are not new.

from Michael Barigian SCE to Everyone: 1:02 PM

@Justin, the concept you highlight makes sense to me, but it depends on the system voltage without the presence of export generation. If system voltage is on the lower end of acceptable without the generation, the export generation may only push the voltage up to the higher end of the limit without actually pushing it over.

from gary holdsworth sdg&e to Everyone: 1:02 PM

I think we need to move onwards...this discussion is going south quickly

from Frances Cleveland to Everyone: 1:03 PM

@Sahm I agree 100% on DER exporting power is already being handled by protection processes. The issue, I believe, is more on protecting harm to equipment, with possible changes, as noted by John Berdner, to safety procedures.

from Michael Barigian SCE to Everyone: 1:03 PM

The Operational Flexibility ICA results are limited only by reverse power flow at automated pieces of equipment, not everywhere on the circuit. ICA OpFlex results are not considered anywhere in this LGP process that I am aware of.

from Frances Cleveland to Everyone: 1:08 PM

I agree that 2030.5 CAN meet the scheduling requirements if we are discussing near-real-time setting of scheduled values, but 2030.5 CANNOT handle 288 events for a whole years

from Brian Seal to Everyone: 1:09 PM

I haven't been on the SIWG calls for a while so probably missed it. Last time I asked it was not a requirement in California that DERs support the 2030.5 or its scheduling features at the local/site level?

from John Berdner Enphase to Everyone: 1:10 PM

Using CSIP to do this would require uploading a 24 value schedule from the cloud every day. This over reliance on communication networks is exactly why the PCS CRD task group developed the concepts of an autonomous recurring schedule. under PCS a 288 value schedule could be loaded once and would include recurrance on a monthly, type of day (weekend /weekday) or daily basis.

from Frances Cleveland to Everyone: 1:10 PM

@Brian Seal - Yes and no. Communications are required with the IOUs if they a > 1 MW. Other DERs may communicate with Aggregators and may or may not use 2030.5

from Alex Mwaura to Everyone: 1:12 PM

Are CSIP certified gateways/inverters capable of measuring or talking an export (PCC level) value and command a different inverter output to maintain a separate scheduled export?

from Alex Mwaura to Everyone: 1:12 PM

Thanks for clarifying this point @BerdnerJohn

from Frances Cleveland to Everyone: 1:12 PM

And right now, the LGP proposal is to have the schedule part of the Interconnection Agreement, not through any communications

from Brian Seal to Everyone: 1:12 PM

@ Frances - thanks. Point me to that detail and I'll read up. Didn't find it in E-5230.

from Brian Lydic - IREC to Everyone: 1:13 PM

@Brian+Frances - but also the IOUs are not leveragin 2030.5 for >1MW systems yet (unless some have started since last we checked in - I think SDGE had the most accelerated plans to do so)

from Frances Cleveland to Everyone: 1:14 PM

CSIP gateways are only required to communicate. A Power Control System may or may not be included to manage PCC export and import, as well as the individual DER

from Frances Cleveland to Everyone: 1:16 PM

The DER systems I am most familiar with are >1 MW and use DNP3 (MESA) for communicating with utilities if so required.

from John Berdner Enphase to Everyone: 1:16 PM

actually PCS only supports Export limiting from all sources or from ESS only (for nem integrity).

from Frances Cleveland to Everyone: 1:17 PM

@John B - from UL's persective PCS is only export limiting, but the real systems do far more.

from John Berdner Enphase to Everyone: 1:18 PM

IIEEE 1547 does not contemplate DER polling. Utility servers need to push commands to DER not the other way around.

from Brian Seal to Everyone: 1:20 PM

Thanks for the updates all. I probably misunderstood what Gordon said earlier. I thought he was asying that E-5230 required that the scheduling be via 2030.5 and at the DER.

from Rustom Dessai to Everyone: 1:20 PM

@Brian Lydic, PG&E has an active program using 2030.5 for telemetry only for >1MW Distribution connected systems

from Frances Cleveland to Everyone: 1:20 PM

DER "polling" is less appropriate than "publish/subscribe" and may be what 1547 will require in the new version

from Regnier, Justin to Everyone: 1:21 PM

There is no procedural path I'm aware of for IOUs to command R21 resources through telemetry - the infrastructure has only been contemplated for information at this point. Owners/Operators/Aggregators are free to use the functionality more broadly, as they own or operate the assets.

from Frances Cleveland to Everyone: 1:23 PM

@Justin - I believe "requests" are allowed, but I'm not sure anyone has implemented them. But they will need to in the future.

from John Berdner Enphase to Everyone: 1:23 PM

@justin: Similarly DER is not required to do polling by 1547 so by and large it does not exist at the DER level.

from Alex Mwaura to Everyone: 1:26 PM

Gordon can answer my question if he likes but it has been answered within the comments.

from Frances Cleveland to Everyone: 1:29 PM

I have to leave to run the SIO Cybersecurity WG

from Brian Seal to Everyone: 1:34 PM

My understanding has been that schedules must reside at the DER site if the schedule is being used to ensure that the DER stays within the time-varying grid ICA capacity.

from Brian Seal to Everyone: 1:35 PM

If so, then how are capabilities at a remote server relevant?

from Bagri, Ramandeep to Everyone: 1:39 PM

thank you, I have to drop off for another meeting. Thank you for the information.

from Brian Seal to Everyone: 2:22 PM

I apologize but I have to drop for another meeting. I will follow up with Jose and Roger afterwards.

from Sky Stanfield to Everyone: 2:33 PM

One option on that could be for us to proceed with the PCS approach, but allow use of other options with agreement with the utility. And then this could be discussed further in the SIWG to further define the relay or RTAC approach.

from Michael Barigian SCE to Everyone: 2:57 PM

Do we know what happens if there is a communications outage longer than 24 hours (from Gordon's presentation)?

from Frances Cleveland to Everyone: 2:57 PM

Just as a note, DNP3, using MESA-DER, can handle all the scheduling requirements

from Frances Cleveland to Everyone: 2:58 PM

And DNP3 with that capability is about to become IEEE 1815.2

from McElvain, Frank to Everyone: 3:03 PM

Energy Division e-mails: frank.mcelvain@cpuc.ca.gov justin.regnier@cpuc.ca.gov jose.aliaga-caro@cpuc.ca.gov

from Alex Mwaura to Everyone: 3:19 PM

@Tam, Screen N with ICA:

from Alex Mwaura to Everyone: 3:19 PM

a. Screen N: Penetration Test

If Integration Capacity Analysis Values are available at the requested Point of Interconnection, evaluate Screen N as follows:

i) Penetration Level Using ICA-SG 576 Profile:

For Interconnection Requests based on Gross Nameplate Rating: Is the Generating Facility aggregate Gross Nameplate Rating less than or equal to 100% of the lowest value in the ICA-SG 576 Profile?

For Interconnection Requests based on typical PV Generation Profile: Is the Generating Facility Generation Profile, based on PVWatts® or equivalent, less than or equal to 100% of the ICA-SG 576 Profile in everyhour?

ii) Screen F1: Did the Interconnection Request pass Screen F1?

If yes to both of the above (pass), continue to Screen O.

If “no” to either or both of the above(fail), the Distribution Provider must

perform a quick review of the failure within Supplemental Review anddetermine the requirements to address the failure.

o If the Distribution Provider requires mit

from Alex Mwaura to Everyone: 3:20 PM

a. Screen N: Penetration Test (Cont’d)

ii) Screen F1: Did the Interconnection Request pass Screen F1 (Cont’d)?

o If voltage is a prevailing constraint, then the full range of smart inverter functions including the volt/var function will be used in power flow analysis for the evaluation of the proposed project. This will reveal if the proposed project causes any voltage impacts of concern. If concerns related to steady state voltage, thermal, or protection exist and the Distribution Provider can identify simple upgrades through power flow analysis (e.g., installation of voltage regulator devices or protection devices to mitigate reduction of reach), then the Distribution Provider will determine the mitigation requirements within Screen N. When larger upgrades or complex protection evaluation is required, Screen N will fail, and the technical evaluation will be conducted under the Electrical Independence Tests or Detailed Study process.

o If no reason for furth

from John Berdner Enphase to Everyone: 3:37 PM

the PCS has numerous abnormal tests that are required to be condicted as part of the evaluation. in addition to 2023 NEC requires a system shutdown in case of a malfunction. the next revision of PCS standard will be updated to include a malfunction test to provide a watchdog function to shut down the system if it exceeds the setpoint for an "extended period of time"

from John Berdner Enphase to Everyone: 3:38 PM

IEEE 1547 has two functions that can be used in rare cases where a system exceeds it's limits.

from Regnier, Justin to Everyone: 3:39 PM

@ John, please expand on these functions

from John Berdner Enphase to Everyone: 3:40 PM

1) a commanded Plimit value will cause the ER to reduce it's power to that level within 60 seconds.

from John Berdner Enphase to Everyone: 3:41 PM

2) the inhibit enter service command requires the system to Cease to energuze and trip within 32 seconds and not to restatrt until the inhibit enter service toggle is released.

from Sky Stanfield to Everyone: 3:43 PM

Will DERMS be in place in alignment with this schedule?

from John Berdner Enphase to Everyone: 3:44 PM

both of the above are mandatory functions for all 1547-2018 compliant systems even if they do not have PCS.

from Sahm White to Everyone: 3:45 PM

It's important to differentiate between physical equipment failure and calculation failure. The PCS may process thousands of calculations per second, and the risk of miscalculation does not increase with repetition. The likelihood of physical failure in a given year may not collelate with a variation in values input into calculations.

from gary holdsworth sdg&e to Everyone: 3:45 PM

years

from Sahm White to Everyone: 3:50 PM

SIOWG has not determined that full DERMS is necessary for communication and monitoring of DER - many functions can be utilized with available comms with reversion to "safe default" settings if comms is not confirmed

from Sahm White to Everyone: 3:55 PM

Bottom line, there does need to be a safety margins to allow for unexpected load/line conditions. That margin can be applied to any time period. If a 10% margin is based on annual or monthly minimum value, that means that the realized margin is actually 30-50% or more in most hours. The question is what margin is actually appropriate for each time period.

from Sky Stanfield to Everyone: 3:56 PM

I think realistically with the PCS certification, we are not going to be deploying any LGP until well into 2024 or 2025.

from gary holdsworth sdg&e to Everyone: 3:58 PM

that's the null hypothesis, no issues

from Younes, Amin to Everyone: 4:02 PM

thanks for that response; I have to drop off.

from Michael Barigian SCE to Everyone: 4:04 PM

Would like to add that 3 years would allow the IOUs to observe any variation in seasonality, and assumes a reasonable rate of LGP projects actually making it through to energization. Keep in mind 12 vs 288 describes an entire year, so this allows us to go through 3 "cycles."

from gary holdsworth sdg&e to Everyone: 4:04 PM

you're talking about DERMS functionality

from gary holdsworth sdg&e to Everyone: 4:05 PM

that's to Frances

from gary holdsworth sdg&e to Everyone: 4:08 PM

who pays, Frances?

from John Berdner Enphase to Everyone: 4:09 PM

perhaps the IOU's could focus on systems which already require telemetry could be used to learn more quickly.

from Frances Cleveland to Everyone: 4:10 PM

If it is worth while to have more export capacity, then it is worth putting in two-way communications - maybe share the cost

from John Berdner Enphase to Everyone: 4:13 PM

@Francis: 1547-2018 compliant DER already has the capability. it is a question of IOU's developing the back end infrastructure so I dont see how that can be cost shared.

from Frances Cleveland to Everyone: 4:18 PM

@John Theoretically compliant DER may have the capability, but most DER still only communicate with their Aggregators

from John Berdner Enphase to Everyone: 4:21 PM

@francis: I disagree. if I have a 1547-2018 complaint DER then it has capability for interoperability at the site level. CSIP compliant DER may or may not have interoperability at the site level.

from Frances Cleveland to Everyone: 4:24 PM

@John - DER yes, but PCS including site load so net export, no