

**NASPI Working Group Meeting
Control Room Solutions Task Team (CRSTT)
Advanced State Estimation Survey:
Preliminary Results**

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October 19, 2016

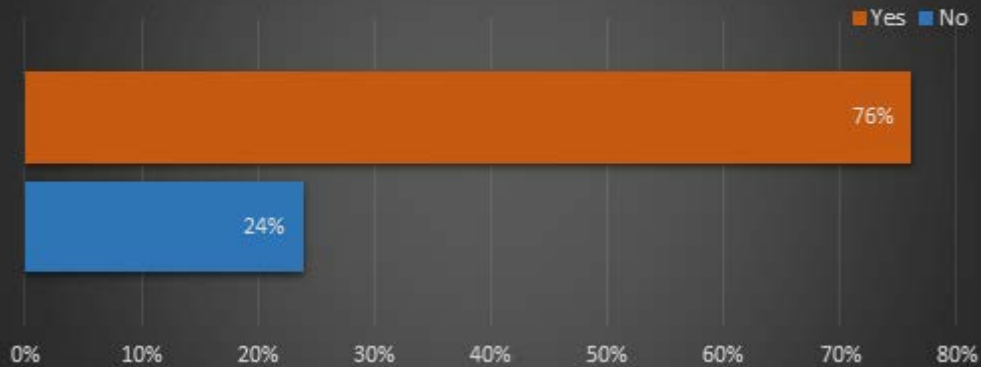


CRSTT Advanced State Estimation Survey

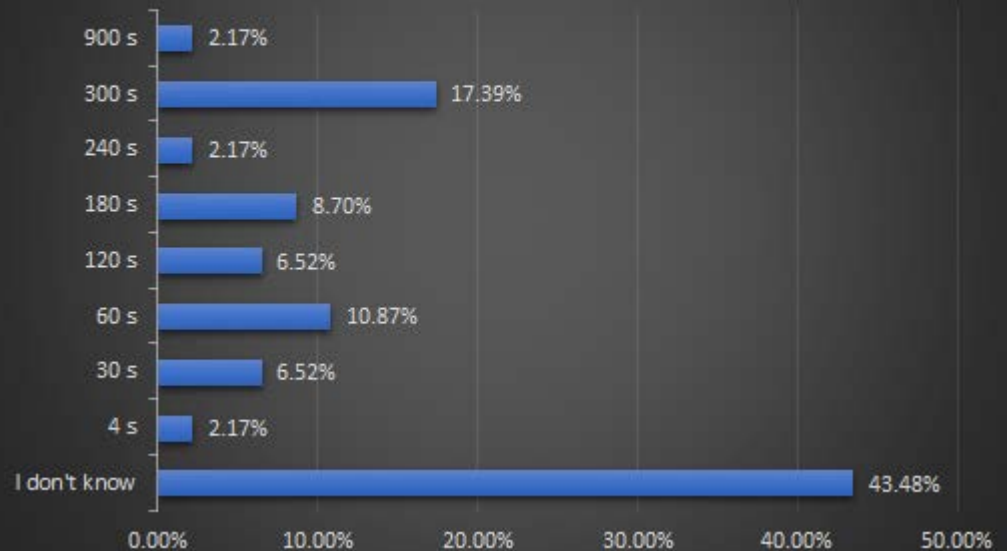
- CRSTT prepared 20 questions on State Estimation (SE)
- Questions were programmed by PNNL as an online survey:
 - Thank you, Teresa!
- CRSTT received **46 Usable Responses**
 - Some questionable and need additional clarifications

SCADA-Based SE

Do you run conventional SCADA-only State Estimation?

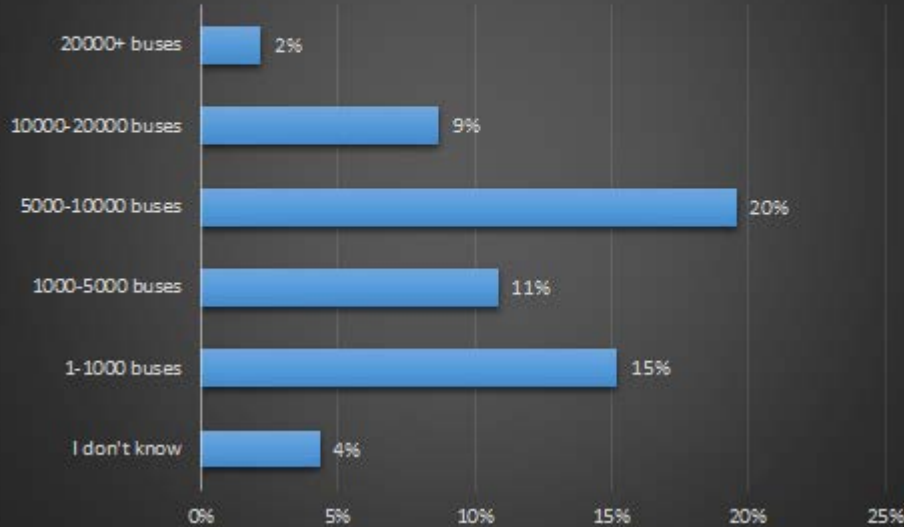


How frequently (in seconds) do you run SCADA-only State Estimation?

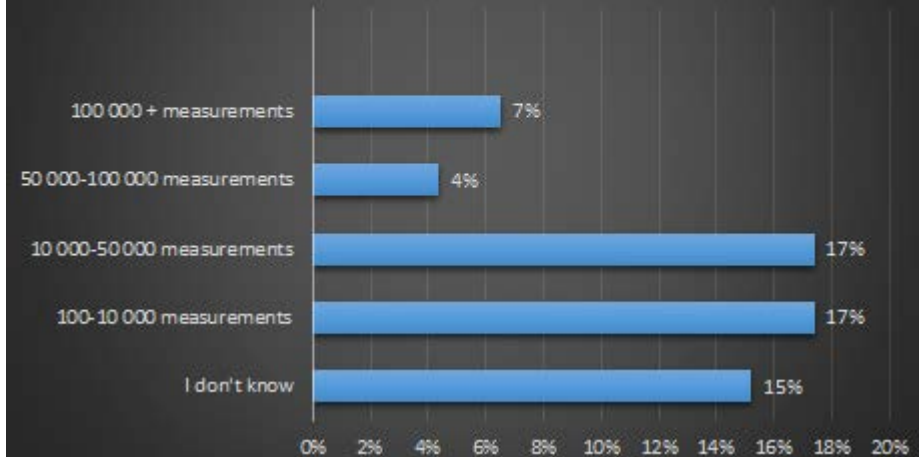


SCADA-Based SE (continued)

What is the approximate size (in number of buses) of your SCADA-only State Estimator model?

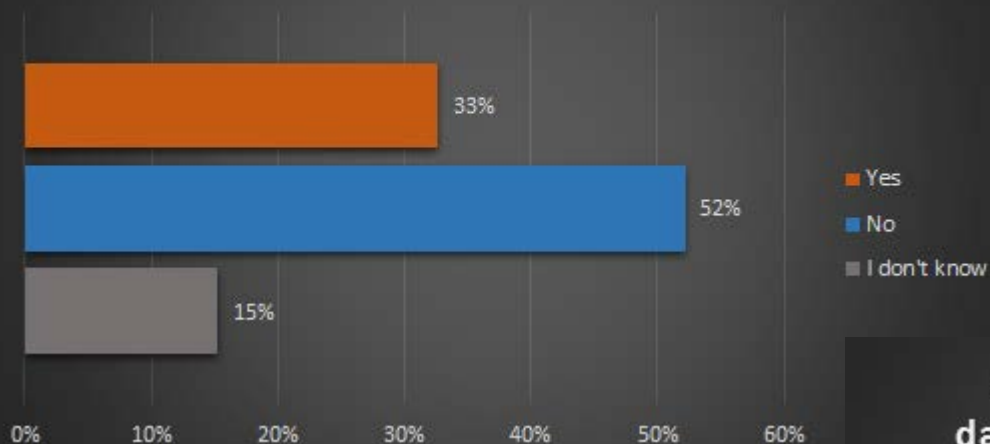


Approximately how many SCADA measurements do you use for your SCADA-only State Estimation?

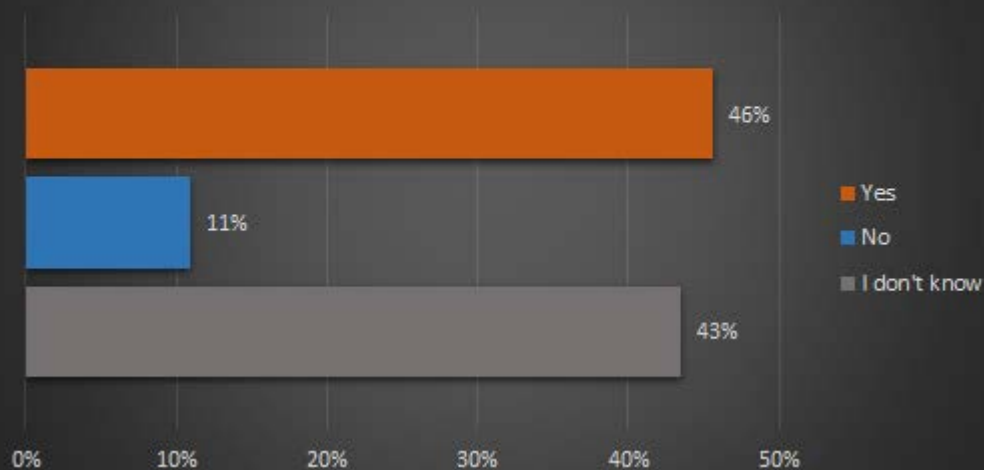


Using PMU Data for SE

Do you use synchrophasor data for State Estimation?

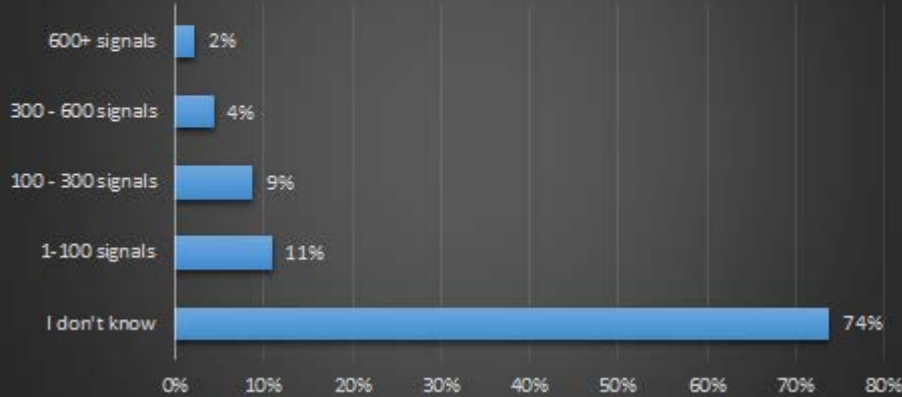


Is there a plan to use synchrophasor data for State Estimation in the future?

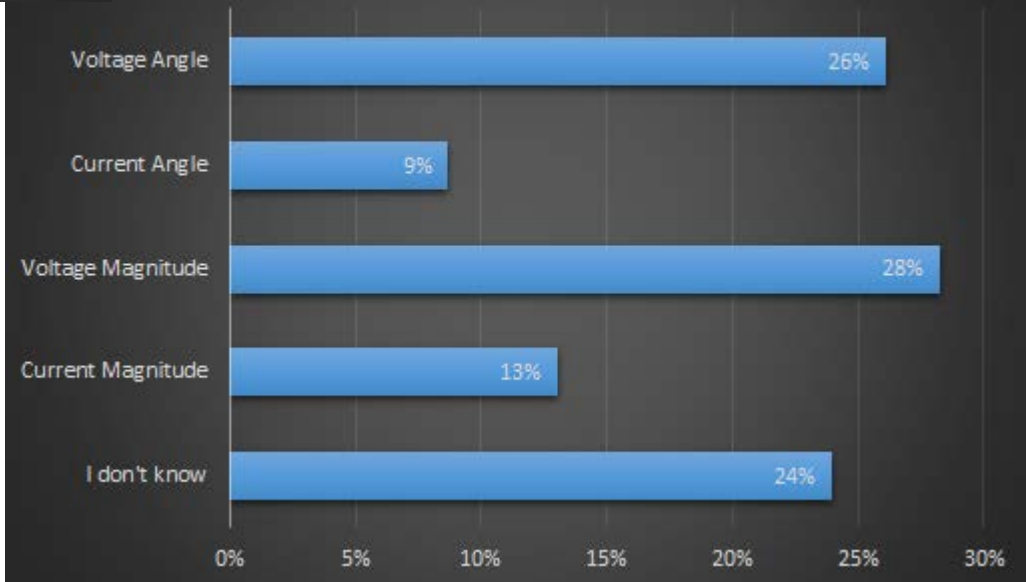


Using PMU Data for SE (continued)

Approximately how many PMU signals do you use for State Estimation?

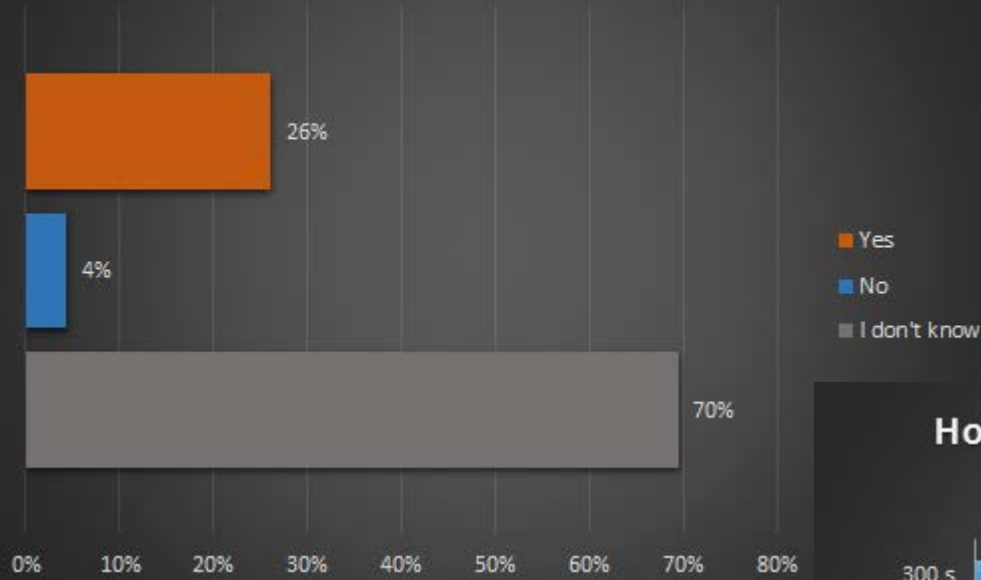


Which PMU signals do you use?

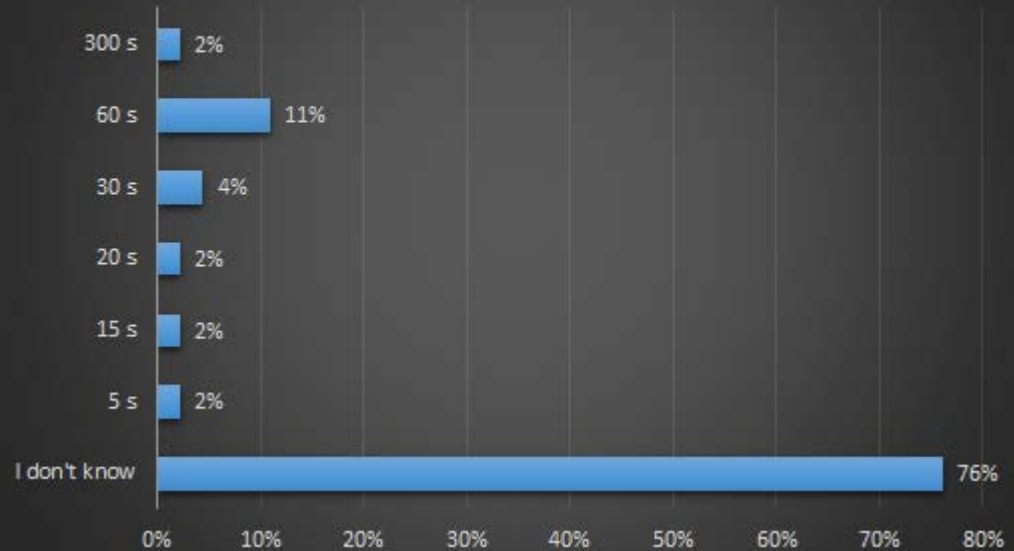


Hybrid SE

Do you run Hybrid State Estimation?



How frequently (in seconds) do you run your Hybrid State Estimation?

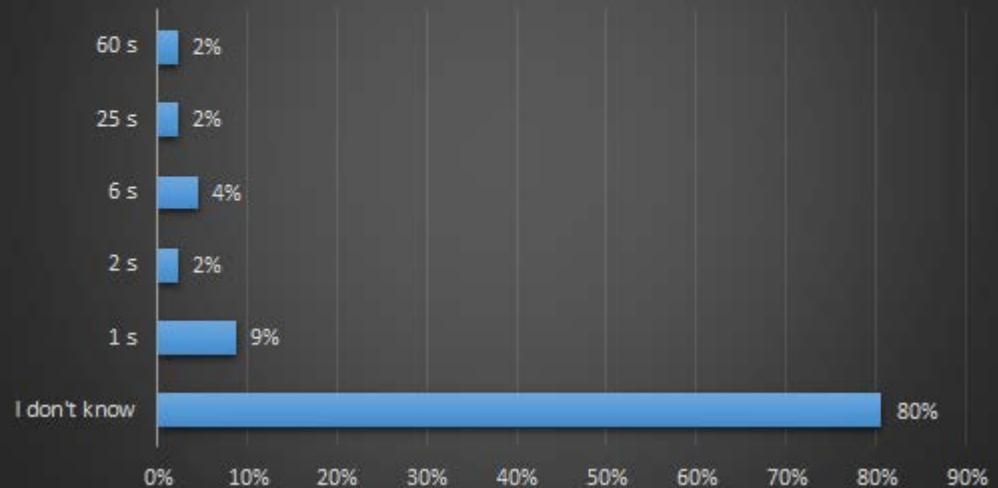


Hybrid SE (continued)

Do you use higher weights for PMU data compared to SCADA in your Hybrid State Estimation?

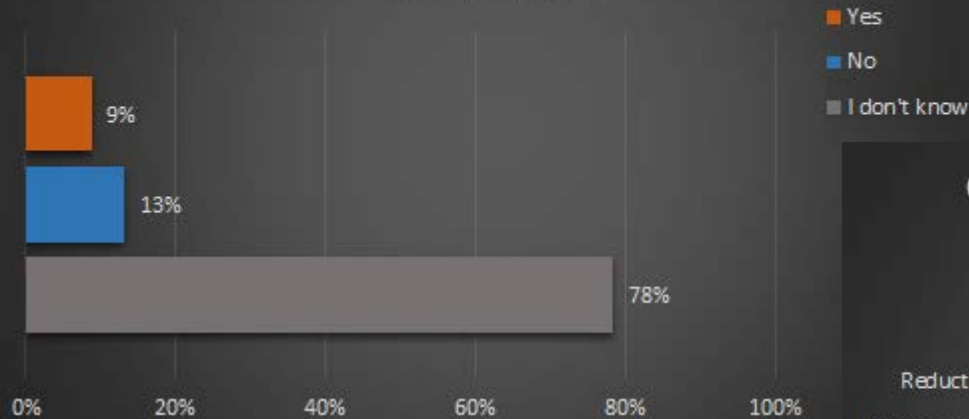


What is the update rate (in seconds) for the synchrophasor data that is used for Hybrid State Estimation?

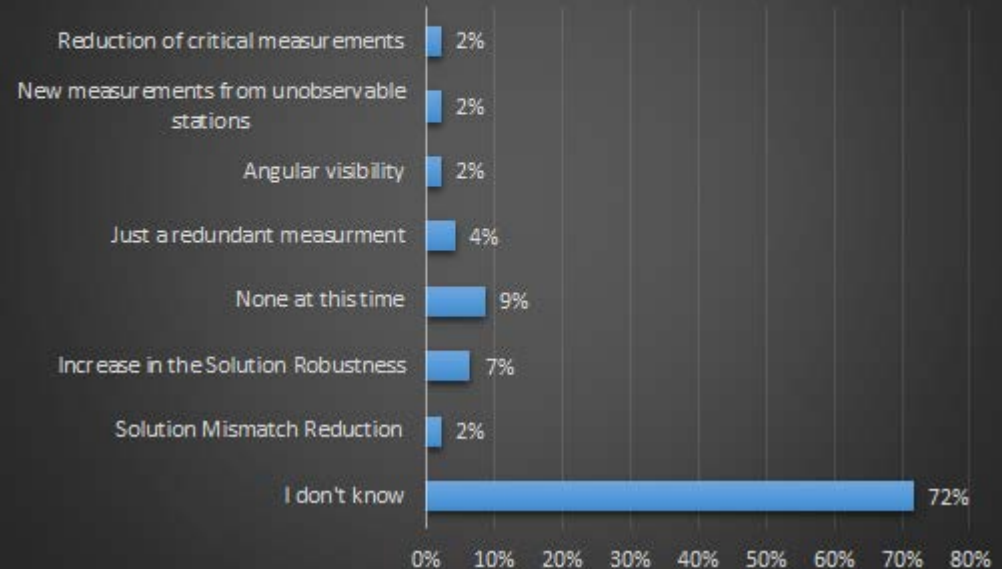


Pros and Cons of Using PMU Data in Conventional SE

Do you have any concerns about using PMU data in conventional State Estimation?

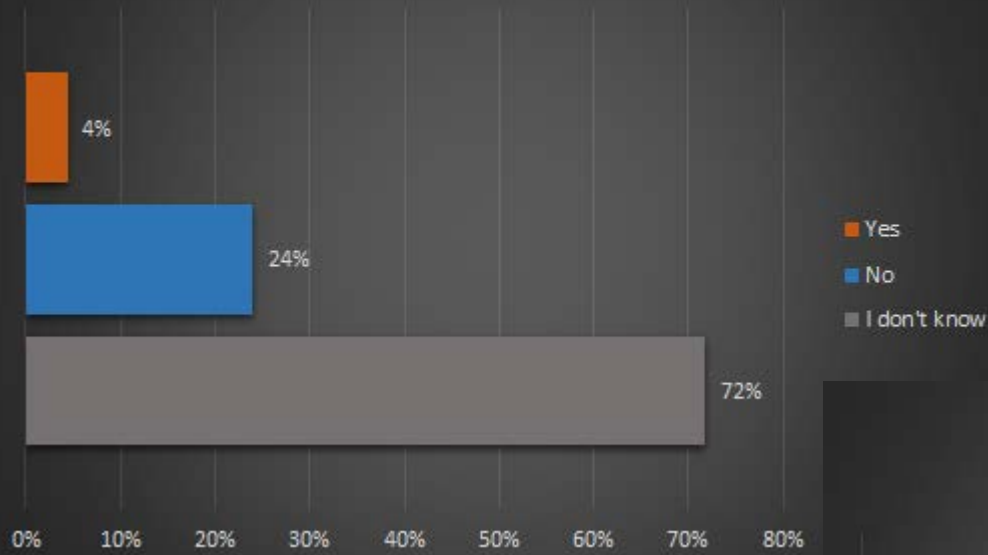


Can you quantify the observed benefit of using PMU data in conventional State Estimation?

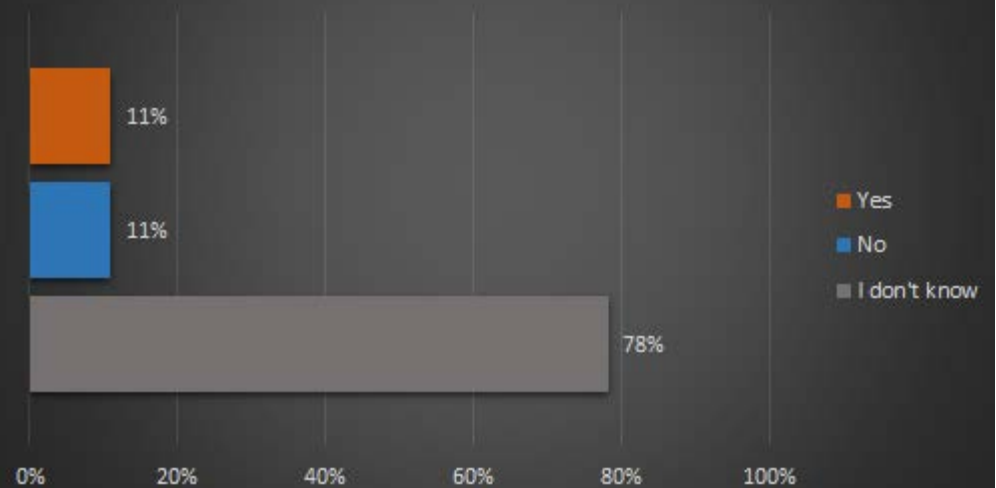


Linear SE

Do you run Linear State Estimation?

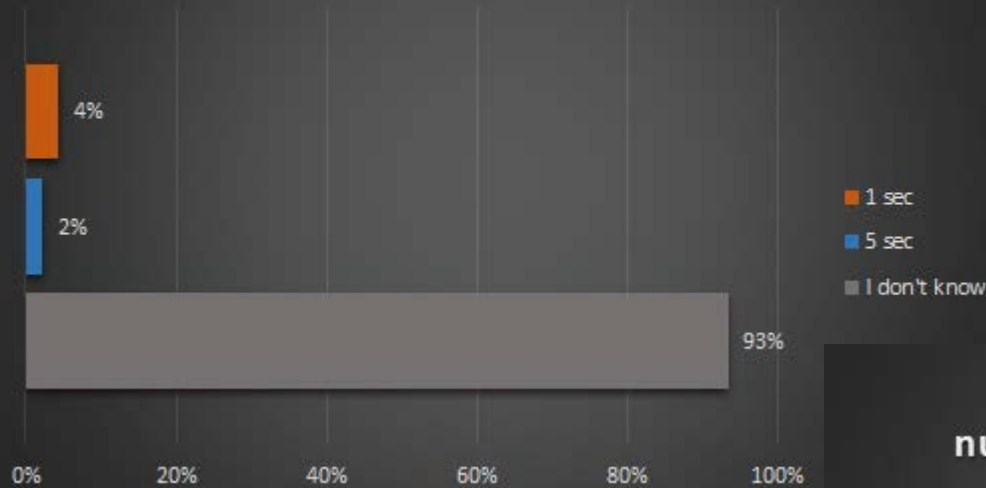


Do you plan to run Linear State Estimation in the future?

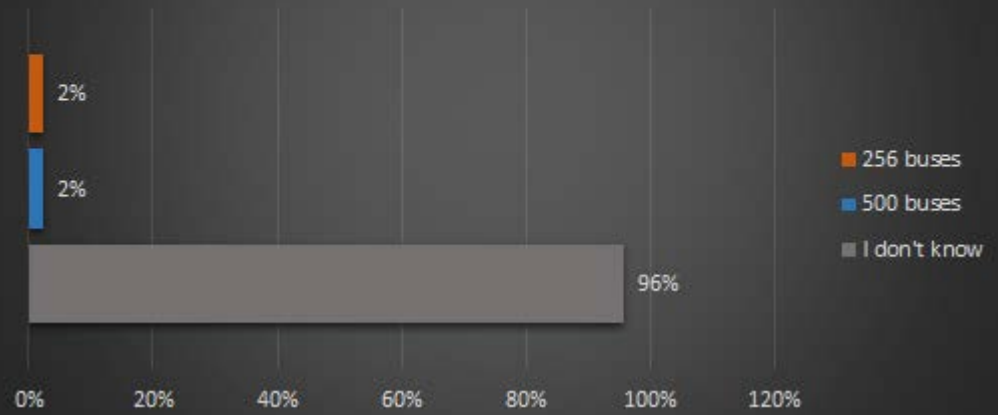


Linear SE (continued)

How frequently (in seconds) do you run your Linear State Estimation?

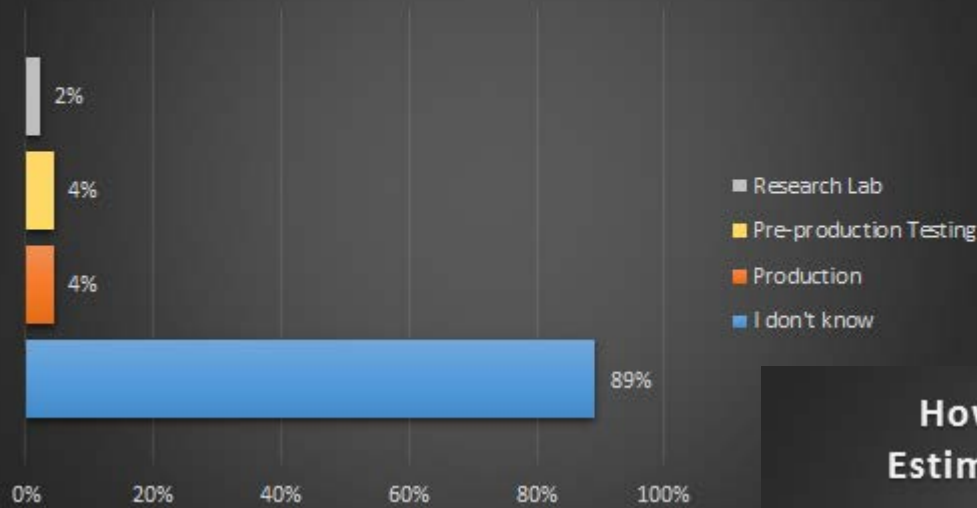


What is the approximate size (in number of buses) of your Linear State Estimator model?

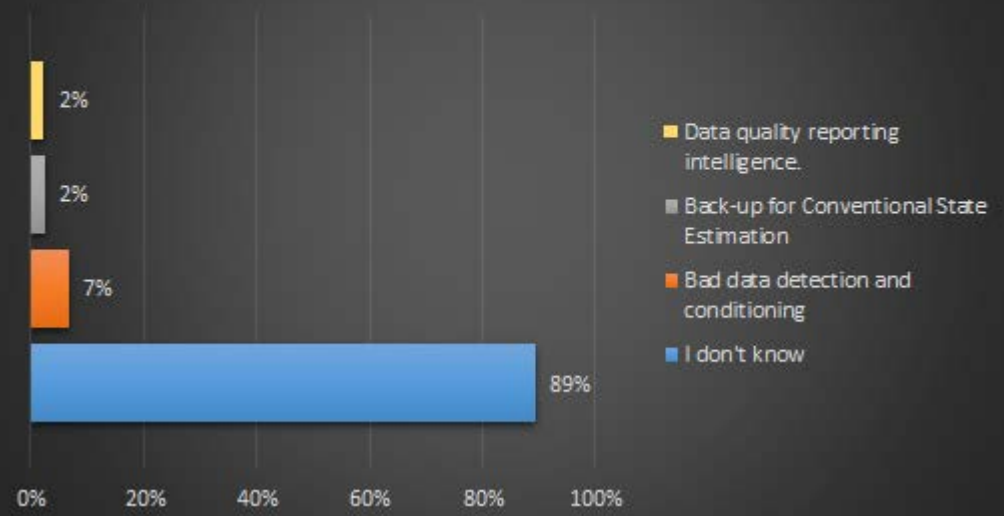


Linear SE (continued)

In what environment do you run Linear State Estimation?



How are the results of Linear State Estimation used by your organization?



Conclusions

- Based on the survey results:
 - Too many “I don’t know” responses
 - PMUs are being used in conventional state estimators:
 - Limited number of signals are being used
 - Very few instances of deployment of PMU-based (linear) state estimator
- How can NASPI/CRSTT promote benefits of PMU-based state estimation?