Perspectives of a corporate user, funder, and (occasional) contributor

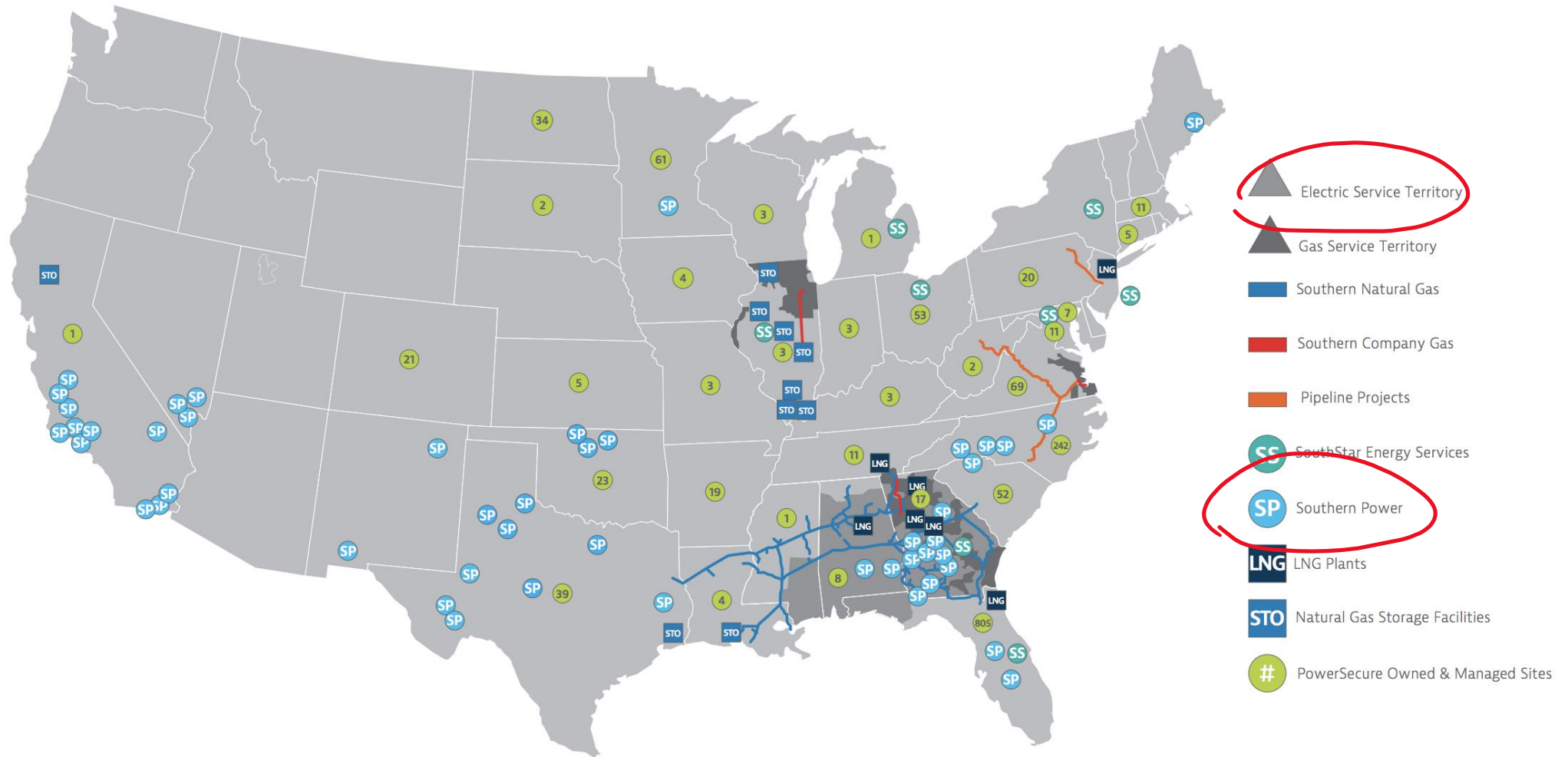Will Hobbs, PE

Southern Company R&D

October 12, 2022

Southern Company

Legend:
- ▲ Electric Service Territory
- ▲ Gas Service Territory
- ▬ Southern Natural Gas
- ▬ Southern Company Gas
- ▬ Pipeline Projects
- SS SouthStar Energy Services
- SP Southern Power
- LNG LNG Plants
- STO Natural Gas Storage Facilities
- # PowerSecure Owned & Managed Sites

Open-Source Software Engagement: Contributor

Contributor

- We have made contributions in the form of:
  - funding
  - ideas
  - data
  - code/issue submissions

- pvlib.forecast (through EPRI)
- NREL SAM features (direct CRADA and via EPRI)
  - fuel cells
  - DC-coupled battery dispatch
  - PV-smoothing battery dispatch (led by EPRI)

- pvlib.forecast plus ~2016 EPRI trial
- A number of SAM features
- Early RdTools supporters

- SolarForecastArbiter/PVAnalytics QC functions
- Some RdTool-related work (e.g., K. Anderson, W. Hobbs, PVRW 2022)

- Handful of GitHub issues submitted to pvlib-python, solarforecastarbiter-core, pvanalytics, and SAM
- A few GitHub Pull Requests that have been merged to SAM
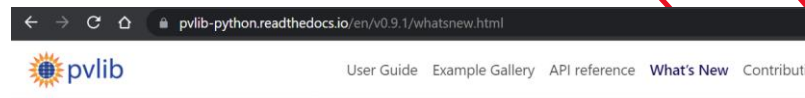
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pvlib.forecasting → Solar Forecast Arbiter

- Southern did a solar forecasting trial with EPRI in 2016
- Needed a better baseline for day-ahead than persistence
- Funded UofAz, through EPRI, to develop, publish, and run pvlib.forecast

Those efforts were major inspiration for Solar Forecast Arbiter project with **approx. 50X the funding** that went into pvlib.forecast

Open-Source Software Engagement: User

User

- SAM
  - I use NREL SAM *a lot*
  - Held in-person SAM training early 2020, with about 20 people in attendance
  - SAM is in our internal "Software Catalog" to make installation without workstation admin rights easy (and to eliminate "Am I allowed to install this software from the internet?" concerns)

User

- pvlib
  - Use at Southern is expanding beyond myself and a few others:
    - RdTools being implement more broadly
    - pvlib is being deployed by IT to translate satellite data to POA, T_bom to supplement weather stations for performance engineering and reporting work

THIS IS BIG!
LAYS A FOUNDATION FOR "TECH TRANSFER"

User

- SolarArbiter:
    - Big supporter of streamlined trials
    - I've been running reference forecasts for about 1 year as a side project and learning experience
    - Fleet Ops group now considering solarforecastarbiter-core reference forecast as in internal backup forecast (or backup to the backup)

(Future) User

- PVanalytics
  - Exciting potential to help our monitoring and diagnostics (M&D) processes
  - Sensor QC is just one area (https://github.com/pvlib/pvanalytics/issues/143)

mid-day delta (Tbom2-Tbom1), 1min
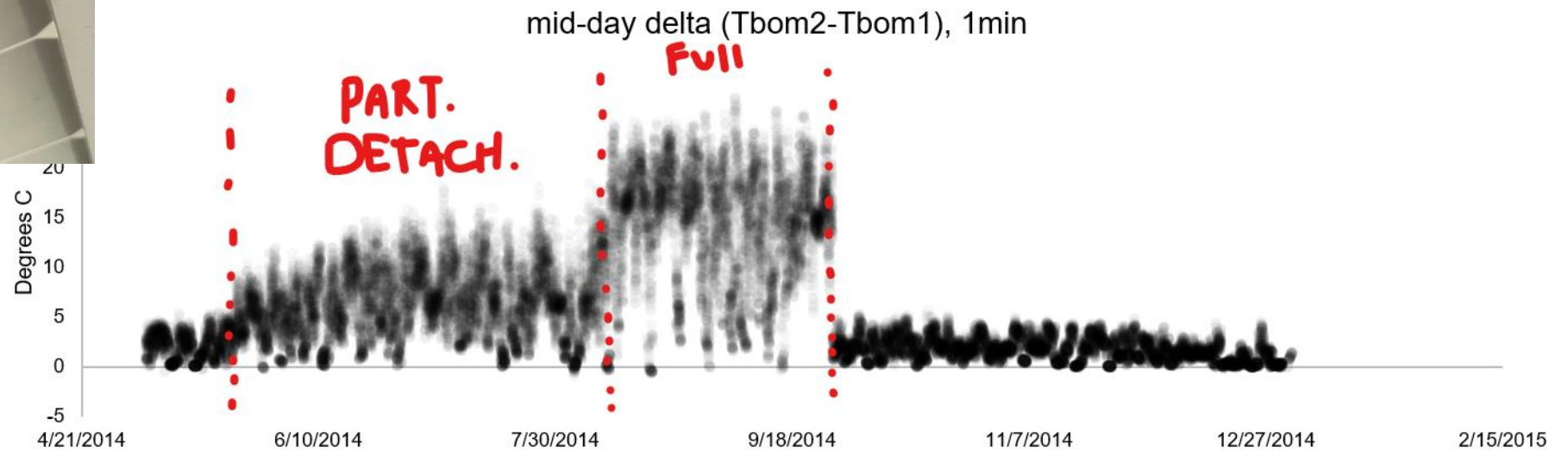
General Perspectives on OSS

Value Proposition

- Can read the source code if we want to (validate, port)
  - Often, knowing you *could* is enough
    - Never left wondering if something is done right
    - Never "locked in"

- Option to contribute is always there
  - Fix something, make it better, add something

Side note: (handwritten)

Thoughts on contributing (code):
- Why do it?
  - Fix something, make it better, add something… in a way that it can be maintained, stay relevant
- Why not?
  - Don't have time
  - Lack of familiarity (with the process or with the project/team, seems intimidating, unsure what lawyers will say)

NATURAL PROGRESSION: (handwritten)

Step 1: get comfortable using OSS
Step 2: get comfortable contributing to OSS

- **My experience: relevant, powerful tools that *adapt quickly* to our needs**

Conclusion

Keep up the good work!

Questions?

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