Introductions:

- What do you do in your job?
    - Started working with EPRI, recently began working with OSTP
    - Initiative is standardized method of sharing power outage information
        - Utility types: IOUs, munis, and co-ops
            - Serve different types of customers
    - This came about in 2012 after Superstrom Sandy, where the number of power outages on tvs, radios, news were all different
        - This project is all about continuity
    - Green button initiative for energy data and blue button initiative for health data, Scott calls this red button data
    - EPRI was looking into the use of social media into reporting power outages
        - Social media post has a location tag
    - Things they're reporting about the outages is simple
    - Utilities share info through software vendor
    - 3300 utilities in the US, and there's only about 12-15 software vendors that do OIS
        - Worked with vendors to implement code so that they could send out the outage information
    - Some utilities report at a zip code level, county level, some at a more granular/neighborhood level
    - Seattle City Light is a large investor in utility
        - Single dashboard in state of Washington
    - They don't have house addresses, the more granular they get the better it is for local responders
- What tools do you currently use to facilitate the job
    - ODIN recruits additional utilities to provide additional support
    - ODIN website has data showing a dozen key data point (start time of outage, how many customers are served, estimated time of restoration, etc.)
    - Adjust restoration based on underserved communities

Questions we have:

- Anvitha: What are some interesting conclusions that come from such a vast amount of outage data? Do the grid companies work with your data that you aggregate to create a more resilient grid? Given your interest in cybersecurity research, what threats do you see with smart metering being put in place? How do you think that emergency telecommunication networks in the event of large outages to get more information about underserved areas' experience with an outage?
- Gabby: Considering your work with the Outage Data Initiative Nationwide (ODIN), what are the advantages of this project compared to electric utility companies displaying power outages on their website? What communities do you believe will benefit the most from this project and why?

Q: What communities do you believe will benefit the most from this project and why?

- New Orleans islands (most rural) are served by ENTERGY (shows info on the circuit level)
    - Shows why certain houses may have power
- Highlight the areas that have the biggest disparity with power outages, but this project can't necessarily fixing the problem
- More rural areas are underserved
    - Trees in the way, further distances
- Project can provide utilities on where to go
- Native American reservations and how they're affected by outages?
- Midwest rural communities
- National issue: each area has their own unique challenges, and there's different value streams for each utility
    - Ice storm loading
    - In southwest (Arizona): issue is monsoons
    - They don't have a lot of outages, but when they have the need it's very sudden
    - Oklahoma and tornadoes
    - Goal: having the information about a certain location
    - Businesses vs residential
        - Need power at grocery stores, hotels, and gas stations because people might need places to stay, they need to be able to eat if spoiled food, people need gas
            - These are priorities
        - Bringing businesses back so they have a job to come back to
        - Bradstreet? has business data
        - Gasbuddy shows what gas stations are up

Q: Given your interest in cybersecurity research, what threats do you see with smart metering being put in place? How do you think that emergency telecommunication networks in the event of large outages to get more information about underserved areas' experience with an outage?

- Smart grid is about putting communications onto the existing power grid
- A lot of devices were put into place before smart grid
- Devices are electric sector specific
- Fixed passwords
- Smart meters
- You need meter readers to access the data
- Trying to put security into systems that were designed a while ago
    - They weren't expecting a tech refresh
- Some utilities have been reluctant to deploy certain features

Q: How far have you come and where do you see this project going?

- Seattle City Light has been they founding utility

    - Had 6 utilities back in 2017
- Utilities are wondering what's in it for them
    - If I'm not mandated to do it then I'm not going to do it
    - ODIN isn't asking for any more data than on the utilities' websites
    - Convincing utilities that this was a good thing was challenging
- Scott wanted to help FEMA in the past
    - All emergencies are local
    - State of Washington asked utilities to participate in this effort because this data will help respond better
        - Utilities responded right away
- Getting the White House on board was the key
- Last Dec. ODIN was in 45 states, DC, and Puerto Rico
    - At 125 utilities
- Peer pressure from competitors
- What's the five year plan? Get more states involved, get different ways to use the data
    - State of illinois were interested in outage data because they wanted to know if COVID freezers would have power issues
- It's up to us to figure out how data will benefit people
- What data is available, what data do we need?

Q: How did you get the word around about this initiative?

- Scott heard things like it might be a good project, but it's not an EPRI project
- Felt that emergency management was the best way to pitch this
- Trying to find different venues to talk about the project
- Emergency responders are less utility, inward facing
    - Have emergency responders be the face of the project
- NRECA were supporters of ODIN and they would talk about it at their meetings
- Slowly got more states on board
- It would be more helpful to have continuous data
    - Do not have full coverage of what areas/utilities are participating
- If you have one utility in the state, you can turn the entire state green
- Having utilities talk to their neighbors and word of mouth
- MREA (Minnesota Rural Electric Assoc.)
    - Wanted a map of all their utilities together and give a single dashboard
    - Within a month ODIN got ~25 of them
- Some utilities still rely on customers to tell them when the power is out
    - It's more manual, so there's a disparity in what the utilities have
    - Could be a factor in restoration
    - Look at what utilities are in that specific area and look for utility's outage map
- Power Outage US
    - Screen scrape the data, publicly available outage map
    - Trying to reproduce separate outage maps
- NationalOutages.come

- State organizations have done maps

Closing remarks:

- If we have specific locations or utilities we're interested in we can send it Scott's way
- Southeast needs assistance because they usually have hurricane storms
    - Georgia, Alabama, Mississippi, South Carolina
    - Southern Company, Georgia Power, Alabama Power, Entergy has a lot of data
        - On the verge of participating in ODIN, and Scott would love if we could push them over the edge

Reflections:

- Look at RAPT and ODIN data
- Talk to different types of grid operators